Service Manual

Video Cassette Recorder

Model : ALL K-MECHA MONO
PAL&SECAM MODELS
DV-K24*/ K44* series
DV-K26*/ K46* series
DV-K28*/ K48* series
DV-K20*/ K40* series
DV-K22*/ K42* series
DV-K2B*/ K4B* series
DV-K2A*/ K4A* series

VCR 2200
inkl.Mechanik

DAEWOO ELECTRONICS CO., LTD.
OVERSEAS SERVICE DEPT.

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•••••• SPECIFICATION ••••••

GENERAL

Power requirement : AC 110~240V~50/60Hz (AFRICA/ASIA)
AC 230~240V~50Hz(U.K.)
AC 230V~ 50Hz(EUROPE)
Power consumption : Max. 16W (in REC mode)
C.EUROPE : 16W
E.EUROPE : 16W
OCEANIA : 16W
FRANCE : 17W
AFRICA : 14W
ASIA : 14W
Temperature : 5°C~35°C (Operating)
-20°C~60°C
Operating position : Horizontal only
Dimensions (WxHxD) : 360x90x288 (mm)
Weight : Approx. 4.1Kg
Format : VHS standard
Tape width : 12.65mm
Tape speed : (SP) : 23.39mm/sec
(LP) : 11.70 mm/sec
Maximum recording time with full-size cassette : (SP) : 240min. with E-240 video cassette
(LP) : 480min. with E-240 video cassette

VIDEO

Signal system : PAL/SECAM colour and CCIR monochrome signals, 625 lines/50 fields
Recording system : Rotary two-head helical scan with a slant double-azimuth combination video head
Input : 1.0Vp-p, 75ohms, unbalanced
Output : 1.0Vp-p, 75ohms, unbalanced
Signal-to noise ratio : 45dB(Rohde & Schwarz noise meter) with NETTETE IMAGE control at center position
Horizontal resolution : 240 lines with NETTETE IMAGE control at center position

AUDIO

Recording system : Longitudinal track
Input : -8 dBm, (CENELEC standard), more than 47 k-ohms, unbalanced
Output : -6dBm, (CENELEC standard), less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range : 100 Hz to 8,000 Hz
Signal to noise ratio : 38 dB (More than)
Audio Distortion : Less than 3% (SP)

TUNER

Tuning system : Voltage synthesized tuner Programmable V/S 99CH (Hyper band)
RF Output : UHF channel 22~69(60) channel 52 is set for U.K.

TIMER

Memory programmable : 99 CH
Back up time : Less than 1 Hour
Clock exactness : In accordance with the exactness of power supply frequency (50Hz)

ACCESSORIES

Provided Accessories : Remote control unit, RF Cable, Battery

* Design and specification can be subjected to change without notice.

CHANNEL COVERAGE

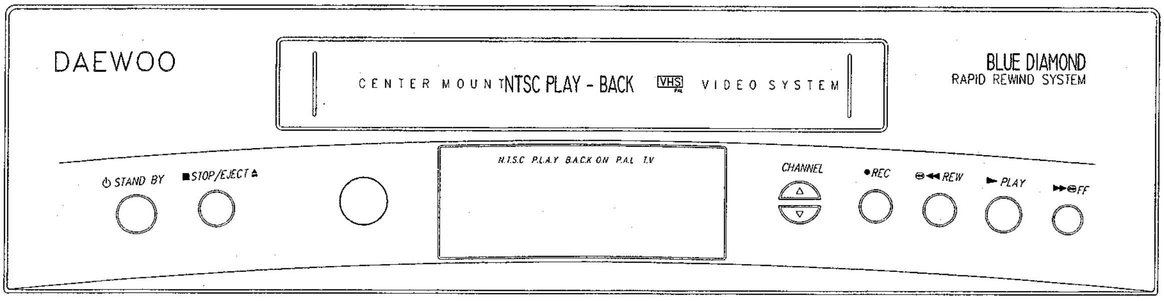
SYSTEM	PAL, SECAM-B/G PAL-I/I PAL, SECAM-B/G, D/K HYPER BAND	PAL, SECAM-B/G WIDE BAND	PAL-I	PAL-B/H
CHANNEL	VHF Ch 2~12 UHF Ch 21~69 CATV Ch X,Y,Z SI~S41	VHF Ch 2~12 UHF Ch 21~69 CATV Ch X,Y,Z SI-S20	UHF Ch 21~69	VHF LOW Ch 1A~5 VHF High Ch 5A~N11 UHF Ch 21~69

IN/OUTPUT JACK TYPE

MODEL	EUROPE	Asia South Africa Australia
JACK TYPE	SCART Type	RCA JACK (PHONE JACK)

SECTION 1. CONTROLS AND FUNCTIONS

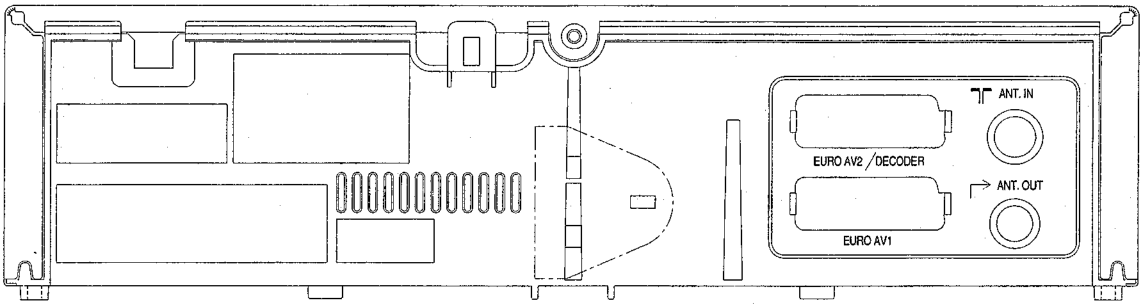
FRONT

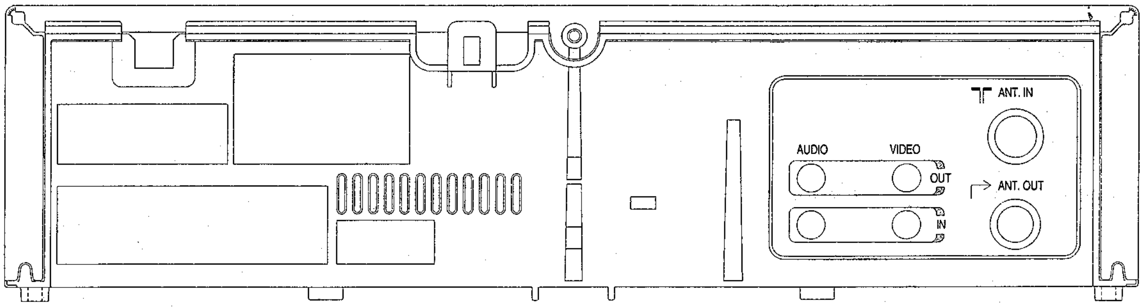

DAEWOO
CENTER MOUNT NTSC PLAY - BACK
VHS
VIDEO SYSTEM
BLUE DIAMOND
RAPID REWIND SYSTEM
N.T.S.C PLAY BACK ON P.A.L T.V
STAND BY
■STOP/EJECT ▲
CHANNEL
●REC
◀◀REW
▶PLAY
▶▶FF

① STAND BY
② STOP/EJECT
③ CHANNEL UP / DOWN SELECTION

④ PLAY BACK
⑤ REWIND / REVIEW
⑥ FAST FORWARD / CUE
⑦ RECORD / OTR (ONE TOUCH RECORDING)

REAR


ANT. IN
EURO AV2 /DECODER
ANT. OUT
EURO AV1


ANT. IN
AUDIO
VIDEO
OUT
IN
ANT. OUT

① EURO AV2 / DECODER (AV OUT)
② EURO AV1 (AV IN)

③ ANTENNA INPUT TERMINAL
④ ANTENNA OUTPUT TERMINAL

• SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

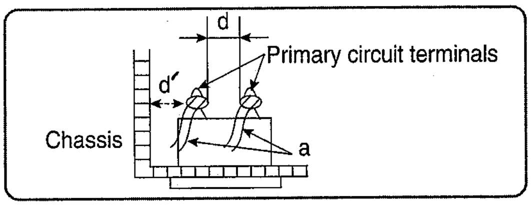


Fig.1

Table 1: Rating for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance (d), (d')
100V	Japan	≥ 1MΩ/500V DC	1kV AC 1 minute	≥ 3 mm
110 to 130V	USA & Canada	—	900V AC 1 minute	≥ 3.2 mm
*110 to 130V 200 to 240V	Europe Australia	≥ 4MΩ/500V DC	3kV AC 1 minute	≥ 3mm (d) ≥ 6mm (d') (a : Power cord)

*Class Ⅱ model only.

Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

4. Leakage current test

Confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and auto input and output terminals, microphone jacks, earphone jacks etc.)

Measuring Method: (Power ON)
Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use and AC voltmeter to measure across both terminals of load Z.
See figure and following table.

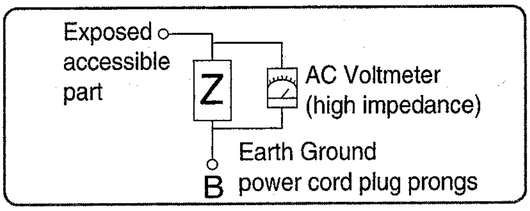


Fig.2

Table 2: Leakage current ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
100V	Japan	1KΩ	i ≤1mA rms	Exposed accessible parts
110 to 130V	USA & Canada	1.5kμF 1.5KΩ	i ≤0.5mA rms	Exposed accessible parts
110 to 130V 200 to 240V	Europe Australia	2KΩ	i≤0.7mA peak/i≤2mA dc	Antenna earth terminals
		50KΩ	i ≤0.7mA peak i≤2mA dc	Other terminals

Note : This table unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

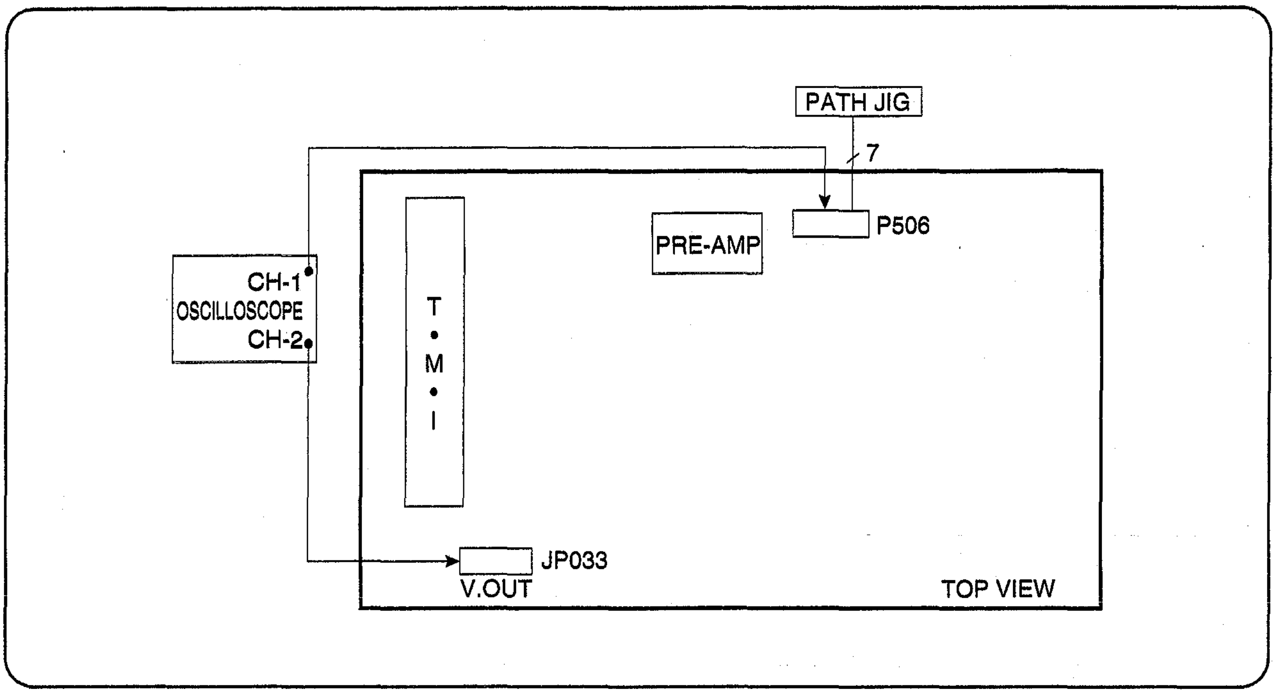
SECTION 2. ELECTRICAL ADJUSTMENTS

2-1. SERVO CIRCUIT ADJUSTMENT METHOD

1. PLAYBACK PHASE

ADJUSTMENT PARTS	CHECKING POINT	MEASURING EQUIPMENT	MODE	TEST TAPE
Check	JP033 V.OUT P506 PIN ④	Oscilloscope	Play	DP-2

• CONNECTION METHOD


PATH JIG
7
P506
PRE-AMP
CH-1
OSCILLOSCOPE
CH-2
T • M • I
JP033
V.OUT
TOP VIEW

• ADJUSTMENT PROCEDURE

1) Play back the test tape. (DP-2)
2) Set the oscilloscope to the CHOP mode. Connect CH1 to the SW PULSE (PIN ③ of P506).
3) Insert PATH JIG and Press "REC" button on the remote control.
4) Check the position of the V-sync from the rising edge of the SW pulse.
(Standard : 6.5H±0.5H)

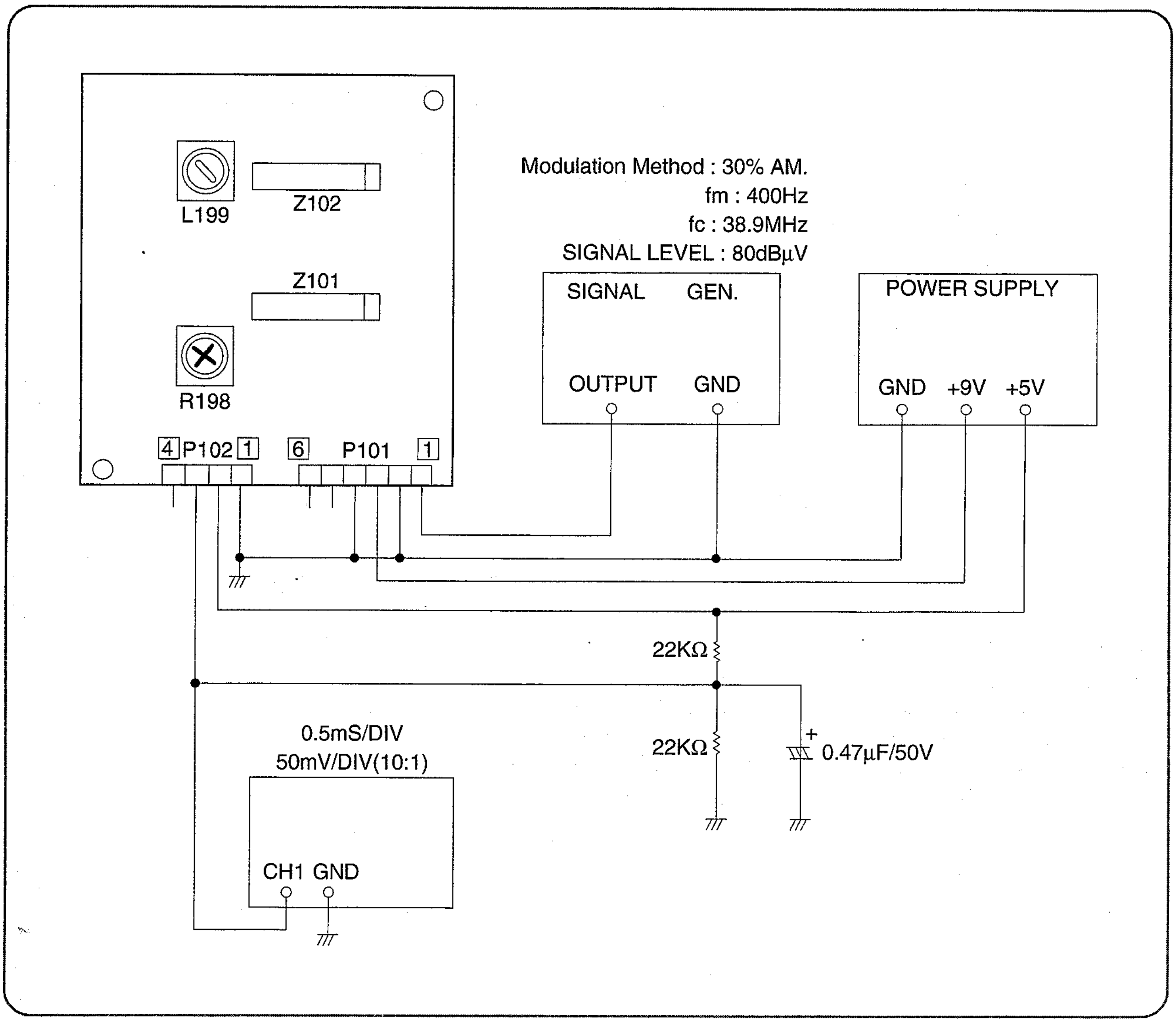
2-2. IF MODULE CIRCUIT ADJUSTMENT METHODS

1. AFT

ADJUSTMENT PARTS	CHECKING POINT	TEST EQUIPMENTS	INPUT SIGNAL
L199	P102 PIN ③	Signal Gen. Oscilloscope Power Supply	Refer to the following.

• AFT CONNECTION METHOD

IF MODULE PCB (TOP VIEW)



L199
Z102
Z101
R198
4 P102 1
6 P101 1
Modulation Method : 30% AM.
fm : 400Hz
fc : 38.9MHz
SIGNAL LEVEL : 80dBμV
SIGNAL GEN.
OUTPUT
GND
POWER SUPPLY
GND
+9V
+5V
22KΩ
22KΩ
+
0.47μF/50V
0.5mS/DIV
50mV/DIV(10:1)
CH1 GND

• ADJUSTMENT PROCEDURE

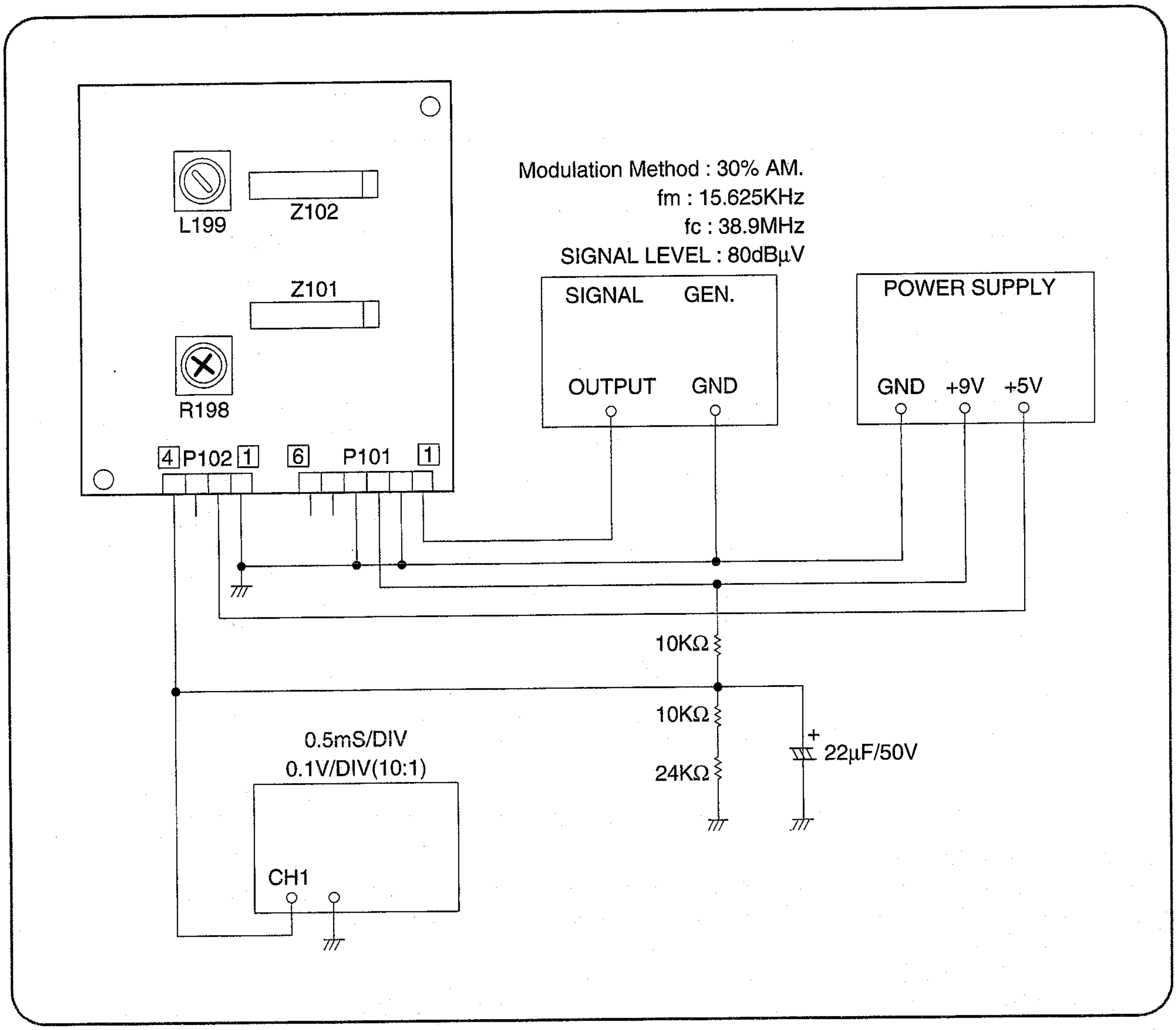
1) Connect the circuit as above connection diagram.
2) Set the each equipment setting as above description.
3) Adjust L199 to obtain 2.5±0.15V DC Voltage at check point.

1. RF AGC

ADJUSTMENT PARTS	CHECKING POINT	TEST EQUIPMENTS	INPUT SIGNAL
R198	P102 PIN ④	Signal Gen. Oscilloscope Power Supply	Refer to the following.

- **RF AGC CONNECTION METHOD**

IF MODULE PCB (TOP VIEW)


L199
Z102
Z101
R198
4
P102
1
6
P101
1
Modulation Method : 30% AM.
fm : 15.625KHz
fc : 38.9MHz
SIGNAL LEVEL : 80dBμV
SIGNAL GEN.
OUTPUT
GND
POWER SUPPLY
GND
+9V
+5V
10KΩ
10KΩ
24KΩ
+
22μF/50V
0.5mS/DIV
0.1V/DIV(10:1)
CH1

- **ADJUSTMENT PROCEDURE**

1) Connect the circuit as above connection diagram.
2) Set the each equipment setting as above description.
3) Adjust L198 to obtain 6.0±0.2V DC Voltage at check point.

SECTION 3. CIRCUIT OPERATION PRINCIPLES

3-1. POWER CIRCUIT

1. OUT LINE

The part that supply DC VOLTAGE to each circuit change AC input voltage into DC voltage. It is based on SMPS(switching mode power supply)system which is located on main PCB. SMPS module is composed of the switching circuit and the transformer of the primary part and the rectifier circuit of the secondary part.

2. NAME AND OPERATION OF PINS ON SMPS MODULE

1) Primary Part

PIN NO	NAME	FUNCTION
1	AC INPUT	SUPPLY AC INPUT VOLTAGE
2		

2) Secondary Part

PIN NO	NAME	FUNCTION
1	+38V	TURN VOLTAGE OF TUNER (33V)
2	(F+3.2V)	F/L DISPLAY FILAMENT VOLTAGE SUPPLY
3	(F-GND)	F/L DISPLAY FILAMENT VOLTAGE SUPPLY
4	-23V	F/L DISPLAY DRIVE VOLTAGE SUPPLY
5	GND	SECONDARY GND
6	GND	SECONDARY GND
7	GND	SECONDARY GND
8	6V	EVER 5V, ON/OFF 5V
9	12.4V	CAP MOT, DRUM MOT (12V) LOADING MOT (12V)

3. START UP AND NORMAL STATUS

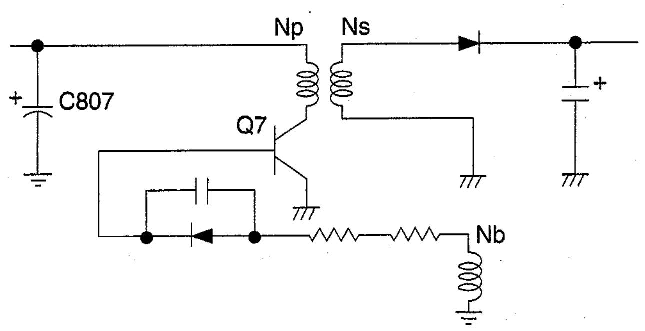
The system of capacitor start-up is applied to DC part. As short circuit status is completed, Ib of (R51+R52/R53). Vin DC which flows is Q51 BASE turn on Q51. The collector current, generated after Q51 turn on, keeps the energy W=1/2Lpl*I*Ton in NP winding.

Input DC voltage is connected to both ends of NP winding.

Nb winding, m which is winded the same as NP has voltage (Vnb=NB/NP*Vin DC) and it supplies Q51 with Ib through R55, R56, C54 and D53 Capacitor C54 is used for speed-up of D53 which rectifies and supplies only positive voltage left on Nb winding, to the base of Q51.

At the same time C56 is charged through R57 and D55.

When the voltage of C56 reaches Vbe (0.7V) of Q52, Q52 is on and Q51 is off. The on-time of Q51 depends on the time constant R57, D55 and C56. When Q51 is off, the energy stored on LP of primary is output through a rectifying diode of secondary part. Then, when the core energy is used up, the diode is switched off but some energy is left in Ns winding. The left energy which cause the voltage in Nb winding, repeats the switching operation to turn on Q51.



4. SOFT START

A soft start circuit, as the name implies, starts to the power supply in a smooth fashion, reducing the inrush current exhibited by all switching power supplies.

When the power supply is start up, Ic current is flowing in Q51 and C56 is charged from 0V.

5. CONTROL OF RATED VOLTAGE

The SMPS applies VCR controlled by detecting voltage fluctuation of 5.8V output. Generally, IC of MICOM uses 5V Vc which has a low fluctuation.

Rated voltage is adjusted by detecting the voltage fluctuation of 5.8V, changing charge time of C56 and controlling the switching time of Q51. IC61 consists of an OP-AMP and a zener diode which has a reference voltage (Vref).

If the output voltage is lower than 5.8V, the charge time of C813 becomes longer.

On the core of the voltage output being over 5.8V because(-) is higher than Vref Output of OP-AMP.

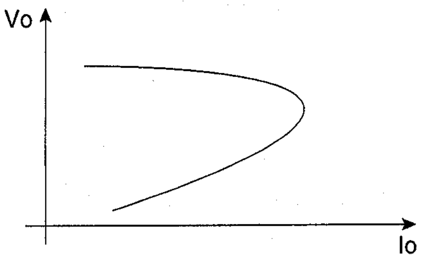
These changes are fed back to the primary side via the photo coupler to the switching control circuit.

As a result of it, Q51 ON/OFF frequency is changed, changing charge time of C56 to contain the constant output Voltage.

6. FOLD BACK CHARACTERISTICS

The most rudimentary form of fold back is like the shape shown below figure. As the load gets bigger, the on-time of Q51 becomes longer so as to supply energy; however, the on-time of Q51 in determined by the serial equivalent resistor time constant of C56, R57, D55.

The on time can not pass this time constant. So if the load requires more on-time, It does not get and output voltage of Np Ic(collector current) is reduced and output voltage goes down.



Vo : Secondary output voltage
Io : Secondary output current

7. SNUBBER CIRCUIT

The circuit protects Q51 from surge voltage generated when the switching transistor turns off it is also required to prevent noise.

Snubber circuit operates when Q51 is in off. The surge voltage is rectified on D52, smoothed on C52 and then the energy is dissipated as heat on R54.

3-2. KEY FEATURES OF VIDEO IC AND ITS RELATIVES

1. LA71511M(QOP 80 PIN) : LUMINANCE-CHROMINANCE AND NORMAL AUDIO SIGNAL PROCESSING IC

1) Applicable to multi system : PAL-GBI, MESECAM, 4.43NTSC, NAP-GBI
2) Built-in NAP circuit to convert NTSC to PAL
3) Normal audio signal processing circuit (self-alignment for record bias)
4) Built-in SECAM discrimination circuit (MESECAM)
5) Built-in record and playback FM-EQ function (I^2C bus control)
6) Y/C separation using built-in comb filter
7) Built-in switching circuit for 3 video/audio inputs
8) Serial control by I^2C-bus
9) Complete adjustment free
10) Crosstalk reduction by CCD IC for exclusive use (Color comb filter is unnecessary)

2. LA70001(2CH), LA70011(4CH) : PRE-AMP IC

1) AGC circuit is built-in this IC (no record current adjustment is required)
2) Playback envelope detector circuit is built-in this IC for the purpose of auto-tracking

3. LC89977M : CCD DELAY LINE IC

1) Built-in comb filter function for color noise reduction
2) Built-in 1H delay line for luminance signal

4. TA1238N : L-SECAM COLOR SIGNAL PROCESSING IC

1) X'tal accuracy self-alignment
   Bell-filter, anti-bell filter, band pass filter
2) 2 way control interface
   I^2C bus (#13 : open)
   Parallel (#13 : GND)
3) SECAM discrimination function on recording and L-SECAM discrimination

3-3. RECORD AND PLAYBACK PROCESSING CIRCUIT

1. RECORD PROCESSING

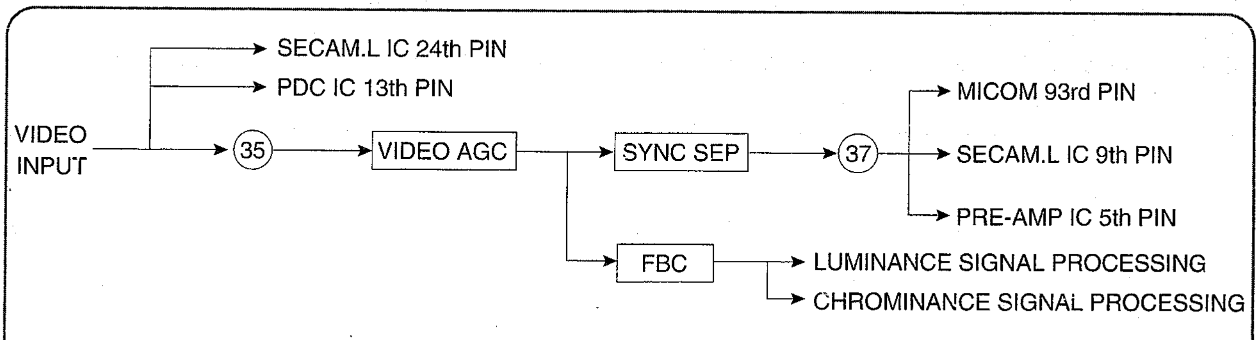


FIG.1 Record Processing

The video input signal selected by the A/V switching IC(BH7634AS) among AUX video input and IF video input, is supplied to the 35th pin of A/V 1CHIP IC.
The input video signal is then automatically adjusted to suitable level by the built-in AGC circuit and supplied to SYNC SEPARATION and FBC(feedback clamp) part respectively.
SYNC signal obtained from the composite video signal by SYN SEP circuit is supplied to the 93rd pin MICOM to determine the presence of signal and to control the SERVO LOGIC.
In SECAM.L IC, SYNC signal is used for BGP and SYNC noise gate pulse, and in PRE-AMP IC, fir HEAD AMP switching timing on TRICK PLAY and AGC circuit for self-aligning the record bias.
The signal through FBC is then processed in luminance signal processing part and chrominance signal processing part independently.

1) LUMINANCE SIGNAL PROCESSING (RECORD)

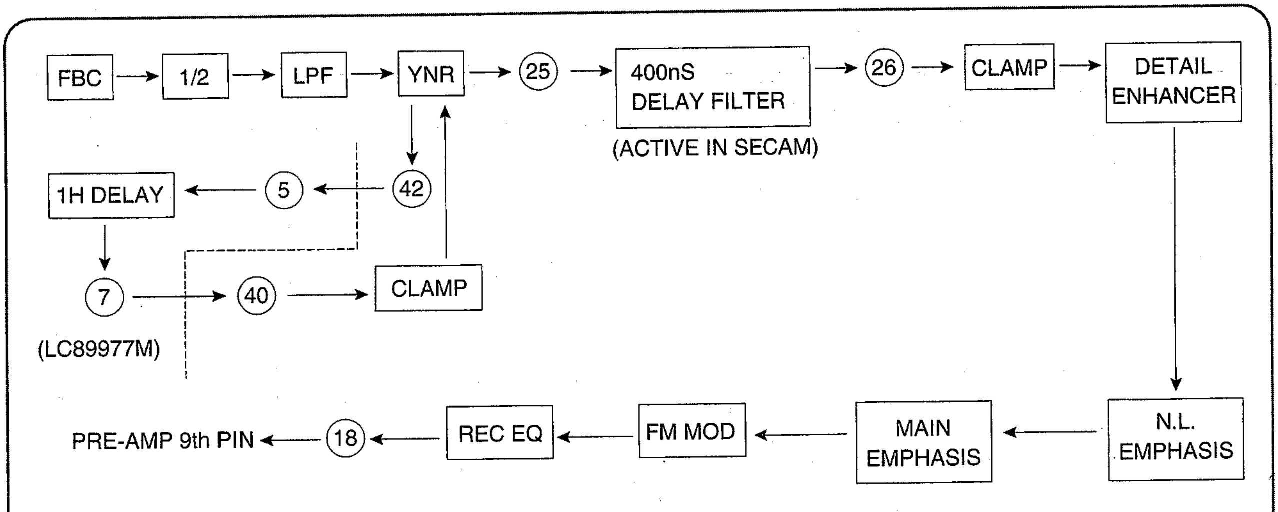

FBC
1/2
LPF
YNR
25
400nS
DELAY FILTER
(ACTIVE IN SECAM)
26
CLAMP
DETAIL
ENHANCER
1H DELAY
5
42
7
40
CLAMP
(LC89977M)
PRE-AMP 9th PIN
18
REC EQ
FM MOD
MAIN
EMPHASIS
N.L.
EMPHASIS

FIG.2 Luminance Signal Processing (RECORD)

The input signal through FBC is reduced a half(-6dB) of its level and then the pure luminance signal is obtained by LPF. In YNR(luminance noise reduction) circuit, noise is eliminated using the original signal and the 1H delayed signal.

This signal is then supplied to 400nS delay filter, but this filter is so activated only if the input video signal is SECAM as to compensate the Y-C mismatching due to the SECAM signal processing nature.

The DETAIL ENHANCER enhances the overall high-frequency response, so an object with fine lines (such as a lawn, hair etc.) can be seen more clearly during PLAYBACK.

The NONLINEAR EMPHASIS and MAIN EMPHASIS can minimize the triangular noise susceptible to frequency modulation.

The luminance signal is FM-modulated and then is supplied to RECORD EQUALIZER for compensating the high frequency response related to HEAD characteristic, where its RECORD EQ is determined by the GROUP 4, LSB 1-4 bits of I²C serial control.

2) CHROMINANCE SIGNAL PROCESSING (RECORD)

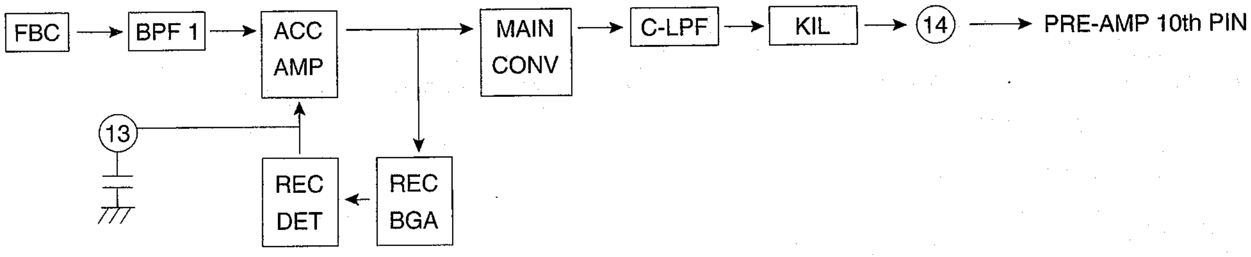

FBC
BPF 1
ACC
AMP
MAIN
CONV
C-LPF
KIL
14
PRE-AMP 10th PIN
13
REC
DET
REC
BGA

FIG.3 Chrominance Signal Processing (RECORD)

The pure chrominance signal is obtained by BPF1 (fsc : 4.43MHz), which filters the input signal through FBC.

The gain of ACC AMP is controlled by the DC voltage at 13th pin.

The main converter down-converts the chrominance signal with signal carrier of 4.43MHz to the signal with signal carrier of 627KHz.

The down-converted signal is again filtered by the LPF, so the pure chrominance component is maintained.

Meanwhile, the burst level of the ACC AMP output signal is detected by the burst gate, and it determines the activation of color killer.

The color killer is also activated when the input signal is SECAM, so the chrominance signal of SECAM is processed in SECAM.L IC.

3) SECAM COLOR SIGNAL PROCESSING (RECORD)

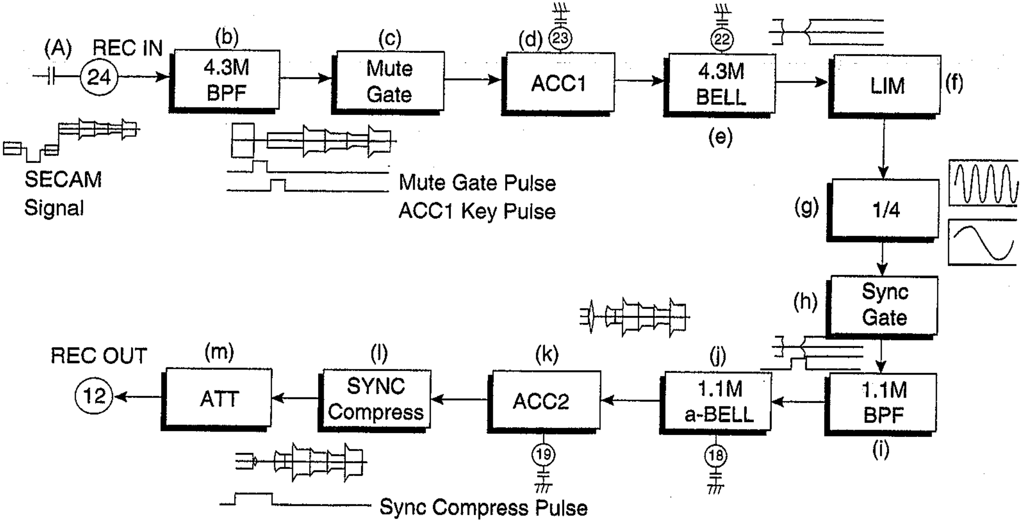

(A) REC IN
24
(b)
4.3M BPF
(c)
Mute Gate
(d) 23
ACC1
22
4.3M BELL
(e)
LIM
(f)
SECAM Signal
Mute Gate Pulse
ACC1 Key Pulse
(g)
1/4
(h)
Sync Gate
REC OUT
12
(m)
ATT
(l)
SYNC Compress
(k)
ACC2
19
(j)
1.1M a-BELL
18
1.1M BPF
(i)
Sync Compress Pulse

FIG.4 Secam Color Signal Processing (RECORD)

(a) SECAM composite signal (luminance-chrominance) is applied to the #24.
(b) BPF (fo=4.3MHz) removes luminance signal and takes out
(c) Mute gate pulse cuts off the output of 4.3MHz BPF during the horizontal blanking period to remove frequency components due to the horizontal sync edge.
(d) Then the chrominance signal is applied to ACC1 to amplify and stabilize the signal to an optimum level for processing.
(e) As the output of the 4.3MHz BPF has ANTI-BELL batture, the signal is applied to the 4.3MHz BELL FILTER to equalize its level and group delay vs frequency. The center frequency of the BELL FILTER adjusted automatically tin the V-SYNC period based on the crystal frequency. A capacitor connected to #22 is to hold this frequency.
(f) Then the equalized signal is applied to the LIMITER to define its amplitude and remove noises included.
(g) The output of the LIMITER is led to the 1/4 countdown circuit to convert FM center frequency from 4.3MHz to 1.1MHz.
(h) The SYNC gate pulse gates the 1.1MHz FM signal during H-SYNC period to remove noises in the period.
(i) The 1.1MHz BPF is to remove high harmonics component which appears on 1/4 countdown.
(j) After BPF, the FM signal is led to the ANTI-BELL to recover ANTI-BELL nature as shown on the original SECAM chrominance signal. This FILTER is also adjusted automatically in the V-SYNC period, and a capacitor connected to #18 holds the center frequency of the FILTER too.
(k) The ACC2 regulates output signal level by detecting its IDENT signal level as same as the ACC1.
(l) The ANTI-BELL FILTER makes front and back of the chrominance signal level peaky.
(m) The output signal level at #12 is selectable via I²C BUS data. In case of the parallel control, the output level is set to 011 I²C BUS data equivalent.

2. PLAYBACK PROCESSING

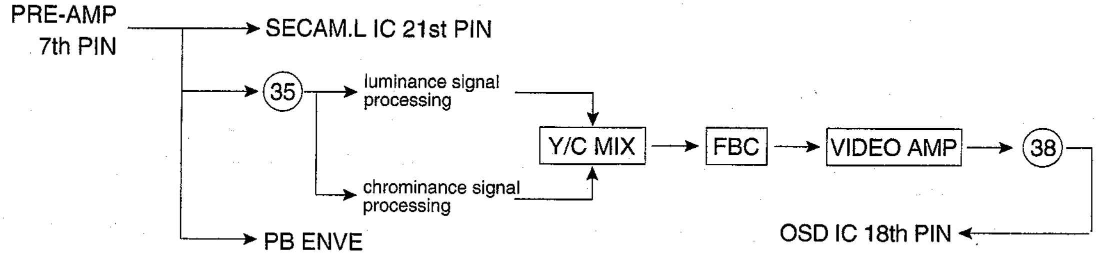

PRE-AMP 7th PIN
SECAM.L IC 21st PIN
35
luminance signal processing
chrominance signal processing
Y/C MIX
FBC
VIDEO AMP
38
PB ENVE
OSD IC 18th PIN

FIG.5 Playback Processing

PLAYBACK ENVELOPE signal from the PRE-AMP IC is supplied to the 21st pin of SECAM.L IC for processing the SECAM color, and to the 15th pin of A/V IC for processing the PAL color, luminance respectively.
The output signal through Y/C MIX after each processing of chrominance and luminance is supplied to the 18th pin of OSD IC.

1) LUMINANCE SIGNAL PROCESSING (PB)

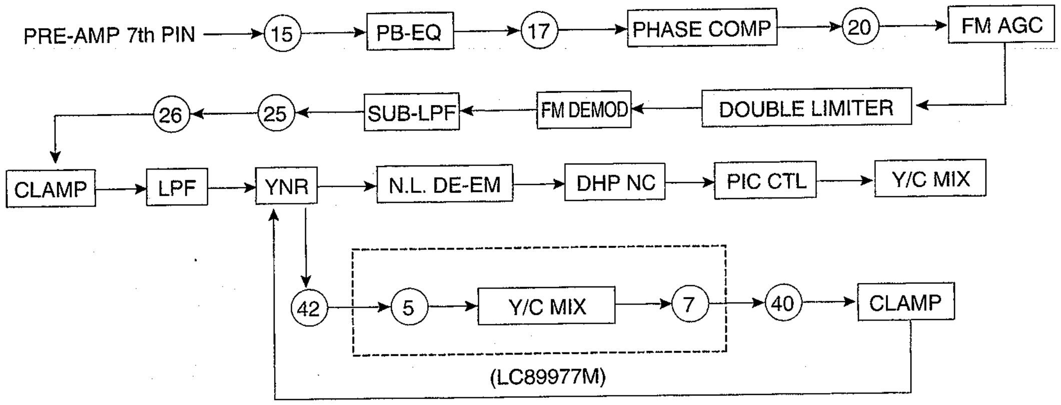

PRE-AMP 7th PIN
15
PB-EQ
17
PHASE COMP
20
FM AGC
DOUBLE LIMITER
FM DEMOD
SUB-LPF
25
26
CLAMP
LPF
YNR
N.L. DE-EM
DHP NC
PIC CTL
Y/C MIX
42
5
Y/C MIX
7
40
CLAMP
(LC89977M)

FIG.6 Luminance Signal Processing (PB)

The PLAYBACK ENVELOPE signal is equalized by the PB-EQ, which flattens the whole frequency characteristic. And the PB-EQ is determined by the GROUP , MSB 7-8 bits.
Phase compensation part improves the pulse characteristics.
DOUBLE LIMITER restores the high frequency portion, and eliminates the spike noise, and AM components.
The signal through DOUBLE LIMITER is then demodulate, and then the RECORD NONLINEAR EMPHASIS characteristic is compensated by the DE-EMPHASIS.
Double High Pass Noise Canceller eliminates the high frequency noise against PB signal.
The Picture Control circuit improves the picture sharpness, while its characteristic is determined by the GROUP 8, LSB 1-4 bits.

2) CHROMINANCE SIGNAL PROCESSING (PB)

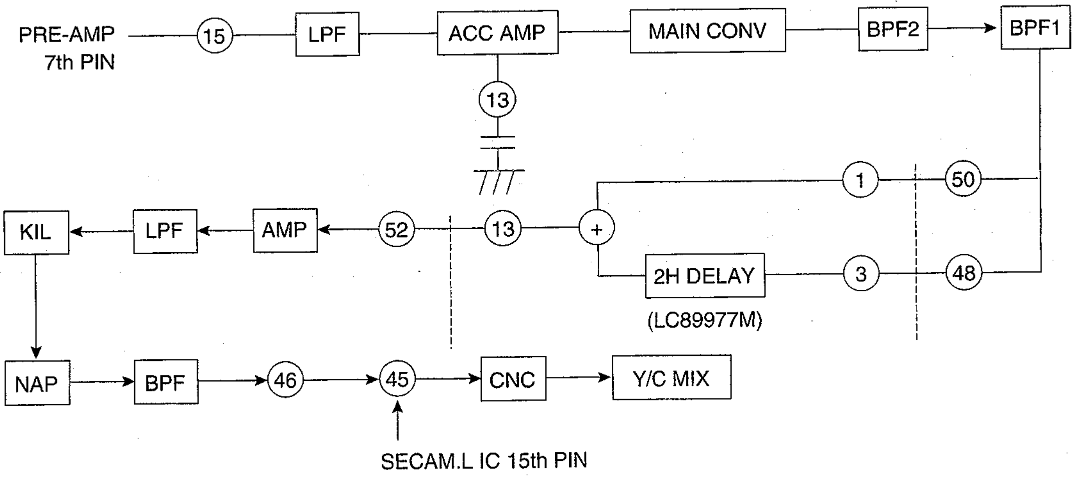
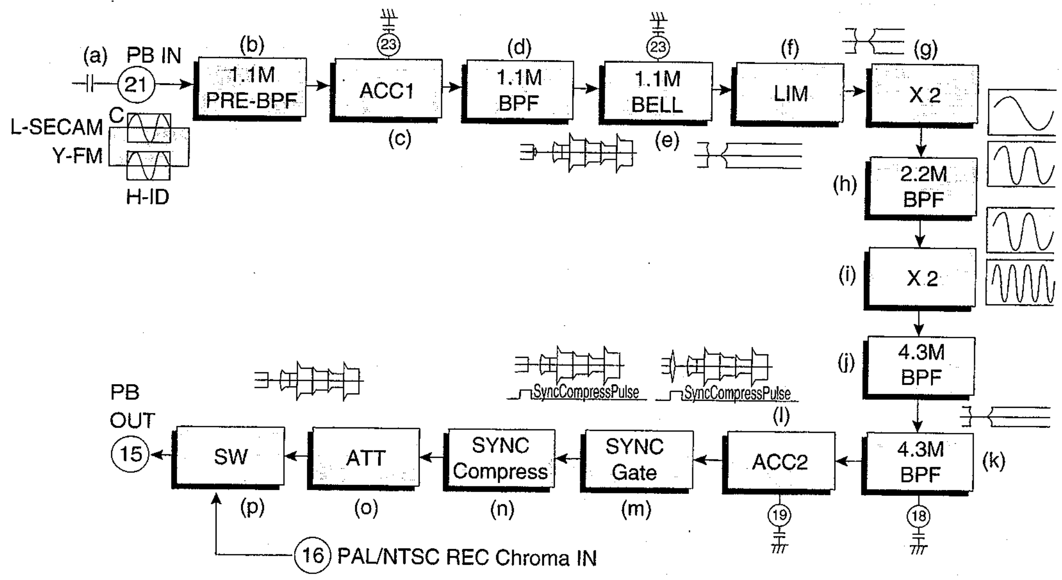

PRE-AMP
7th PIN
15
LPF
ACC AMP
MAIN CONV
BPF2
BPF1
13
1
50
KIL
LPF
AMP
52
13
+
2H DELAY
3
48
(LC89977M)
NAP
BPF
46
45
CNC
Y/C MIX
SECAM.L IC 15th PIN

FIG.7 Chrominance Signal Processing (PB)

The down-converted chrominance signal is obtained from PB ENVE signal by LPF first. And then the signal is up-converted to 4.43MHz by the MAIN CONVERTER.
The redundant harmonics is filtered out by the BPF, and then the signal is applied to the CCD IC to reduce the chrominance crosstalk.
The NTSC PLAYBACK is possible on PAL/SECAM SYSTEM by the NAP circuit, the activation of which is determined by GROUP 7, MSB 7-8 bits.
The signal is then applied to Color Noise Canceller and mixed together with the luminance signal.

3) SECAM COLOR SIGNAL PROCESSING (PB)



(a) PB IN
21
L-SECAM
C
Y-FM
H-ID
(b)
1.1M PRE-BPF
ACC1
23
(c)
(d)
1.1M BPF
23
1.1M BELL
(e)
(f)
LIM
(g)
X 2
(h)
2.2M BPF
(i)
X 2
(j)
4.3M BPF
4.3M BPF
(k)
18
ACC2
(l)
19
SyncCompressPulse
SyncCompressPulse
SYNC Gate
(m)
SYNC Compress
(n)
ATT
(o)
SW
(p)
PB OUT
15
16
PAL/NTSC REC Chroma IN

FIG.8 SECAM Color Signal Processing (PB)

(a) PB signal (SECAM chrominance signal mixed with the Y-FM signal) from the PRE-AMP is applied to the #21.

(b, c) The Y-FM signal is reduced by the1.1MHz PRE-PBF, and SECAM chrominance signal is taken out by the 1.1MHz BPF which locates after ACC1.

(d) As the same as the REC mode, the chrominance signal is regulated by the ACC1.

(e) ANTI-BELL nature of the chrominance signal is equalized by the 1.1MHz BELL FILTER as same as the REC mode.

(f) Also the LIMITER defines the amplitude and removes the noises.

(g) After the LIMITER, the chrominance signal is multiplied by 2(1.1MHz to 2.2MHz).

(h) The 2.2MHz BPF removes high harmonics which appears on the output.

(i) Again the signal multipled by 2(2.2MHz to 4.3MHz).

(j) Another harmonics removal.

(k) After that, the chrominance signal is led to the ANTI-BELL FILTER to recover BELL nature as same as the REC mode.

(l) The ACC2 regulates the output signal level, as same as the REC mode.

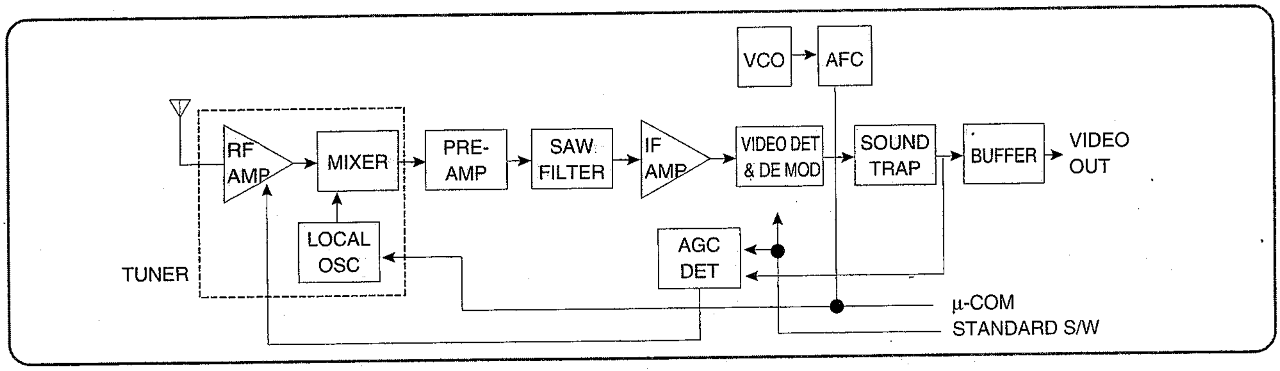
(m) During the H-SYNC period, a DC level is inserted to the chrominance signal to remove the noises.

(n) As same as the REC mode, peak edges of the chrominance signal are compressed to under defined level.

(0) The output signal level (#15) is selectable as same as the REC mode in the SECAM mode. If the mode is not SECAM, the SW changes the output from the ATTENUATOR output (SECAM) to #16 (PAL/NTSC REC IN) signal.

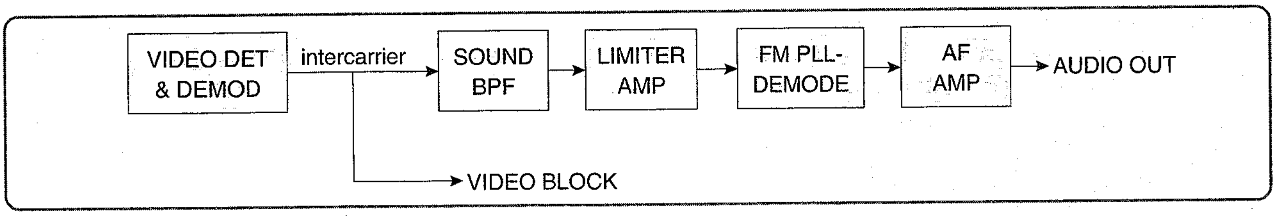
3-4. IF CIRCUIT OPERATION

1. VIDEO SIGNAL FLOW



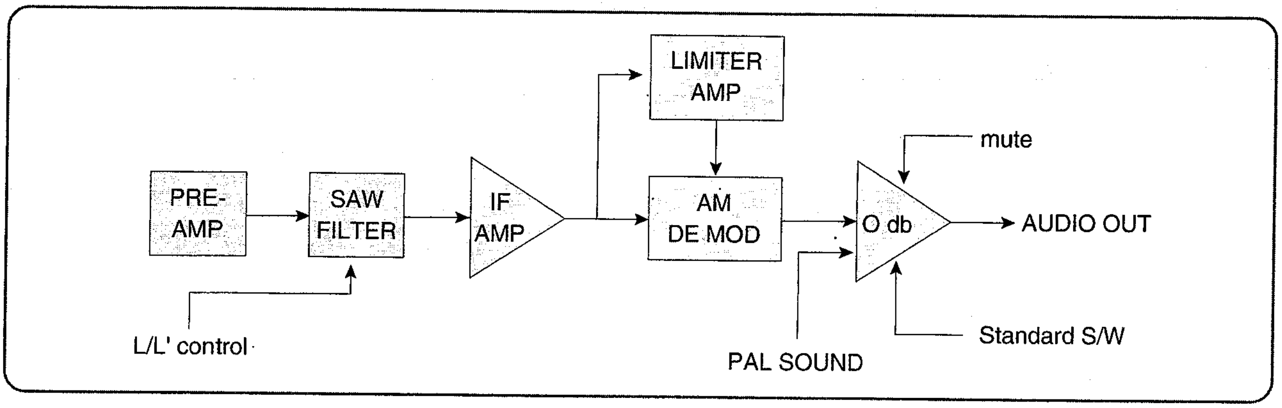
The signal from the ANT is amplified for selectivity, to decrease image interference, and increase S/N using the RF AMP. The RF signal at the MIXER is subtracted from the LOCAL OSC frequency using the upperside band method, to change it into the IF signal; 38.9MHz. The IF signal converted from the RF signal in the tuner block is amplified by about 20dB to increase S/N in the pre-amp block. The reason for thesis that the SAW filter has its own insertion loss of about -18 to -22dB. The SAW filter is a kind of BPF, used to remove the near channel harmonics and make the desired frequency response. The IF AMP desired of about 60 to 70dB gain for receiver sensitivity and selectivity. The vision IF AMP consists of three AC-coupled differential amplifier stages; each stage uses a controlled feedback network called AGC. To maintain the video output signal at a constant level the automatic control voltage is generated according to the transmission standard. For negative modulation in the PAL standard the peak-sync level is detected, and for positive modulation in the SECAM standard the peak-white level is detected. The AGC detector charges and discharges the AGC capacitor to set the IF gain and the tuner gain. The standard is switched by the μ-COM. We can also adjust the tuner AGC voltage take over point. This allows the tuner and the IF SAW filter to be matched to achieve the optimum IF input signal. The IF amplifier output signal is fed to a frequency detector and to a phase detector. The frequency detector is operational before lock-in. AFC current is generated which is proportional to the frequency difference between the input signal and the VCO frequency. The control voltage for the VCO is provided by the phase detector. The video modulator is a type of the multiplier. The vision IF input signal is multiplied by the in-phase component of the VCO output. The demodulate output signal is fed via an integrated LPF (about 12MHz) to the video amplifier for suppression of the carrier harmonics.
The polarity of the video signal is switched in the demodulate stage according to the standard switch. The VCO operates with a symmetrically-connected reference L-C circuit, running at the double vision carrier frequency (77.8MHz) to decrease the frequency error. Frequency control is performed by an internal varicap diode. The voltage used to set the VCO frequency to the actual double vision carrier frequency, is also amplified and converted to give the AFC output current. The AFC output is fed to the μ-COM to change the LOCAL OSC frequency and for channel searching. The VCO signal is divided by-two in a travelling wave divider, which generates two differential output signals with exactly 90 degrees phase difference, independent of frequency. The video signal passing through the 5.5MHz sound trap is fed to the buffer.

2. PAL AUDIO FLOW



The FM sound intercarrier signal passing through the 5.5MHz sound BPF is fed to a limiter amplifier before it is demodulate. This gives high sensitivity and AM suppression. The limiter amplifier consists of seven internal AC-coupled stages, minimizing the DC offset. The FM-PLL demodulator consists of an RC-oscillator, loop filter and phase detector. The oscillator frequency is locked on to the FM intercarrier signal from the limiter amplifier. As a result of this locking, the RC-oscillator is frequency modulated. The modulating signal voltage is used to control the oscillator frequency using this technique, the FM-PLL works as a FM demodulator. The AF signal coming out of the FM-PLL demodulator is amplified and buffered in an output stage.

3. SECAM AUDIO FLOW



Because the SECAM TV sound system uses amplitude modulation, we need an AM-sound demodulation process. The sound IF signal passing through the SAW filter is fed to the sound IF amplifier which consists of three AC-coupled differential amplifier stages each with about 20dB gain.

At the output of each stage is a multiplier for gain controlling. The automatic gain control voltage, used to maintain the AM demodulator output signal at a constant level, is generated by a mean level detector. This AGC detector charges and discharges the AGC capacitor controlled by the output signal of the AM demodulator which is compared to an internal reference voltage.

The IF amplifier output signal is fed to a limiting amplifier.

The limiter output signal (which is no longer AM modulated) is also fed to the multiplier. In this way we get AM demodulation (in phase demodulation).

After lowpass filtering (400MHz) for carrier rejection and buffering, the demodulator output signal is fed to an operational amplifier with three input stages and 0dB gain. One input is SECAM sound, the other is PAL sound. A sound mute control signal can also be used to mute the OP amplifier output.

4. TMI BLOCK

The TUNER, MODULATOR, and IF MODULE, which is separated to each module conventionally, is presently united to one block (TMI block)

(a) PLL METHOD AND I²C-BUS CONTROL

The RF OUTPUT channel can be varied from 22CH to 69CH by remote control using PLL method and I²C-BUS control.

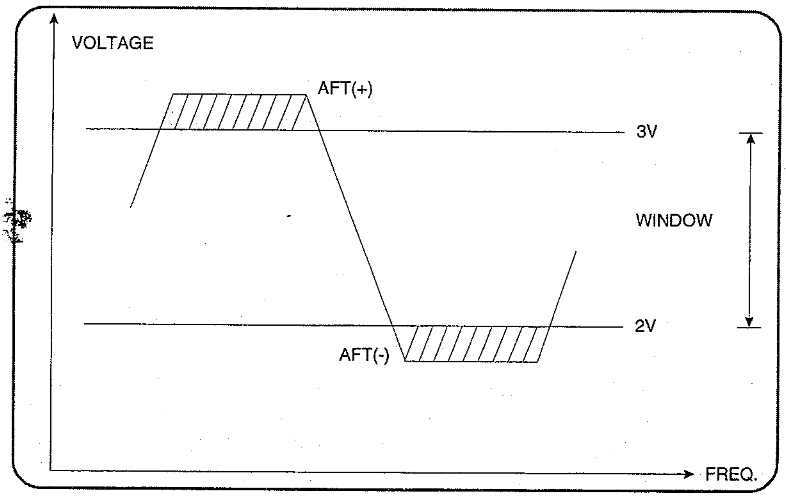
Moreover, SYSTEM(PAL, MESECAM, SECAM), SOUND CARRIER FREQUENCY, AND TPSG(TEST PATTERN SIGNAL GENERATOR) can be changed by remote control as well.

The P/S ratio, white clip, power saving, etc., also can be controlled only by changing a I²C-BUS data according to the designer's intention.

(b) DIGITAL AFT METHOD

Conventionally, when the frequency deviates, the variation of AFT output from IF circuit was compensated by feedbacking it to TUNER AFT input.

On the other hand, if AFT, which is currently adopted to these models from IF circuit deviates the window range, the VT value is changed to maintain the AFT voltage to be within window range by checking AFT(+) and AFT(-) on MICOM.



3-5. AUDIO SIGNAL PROCESSING (LA71511M)

The circuitry of AUDIO part is similar to that of the conventional AUDIO part in case of EE and PB mode, but in REC mode, due to the internal operation of self-alignment, it shows a lot of differences.

1. EE MODE

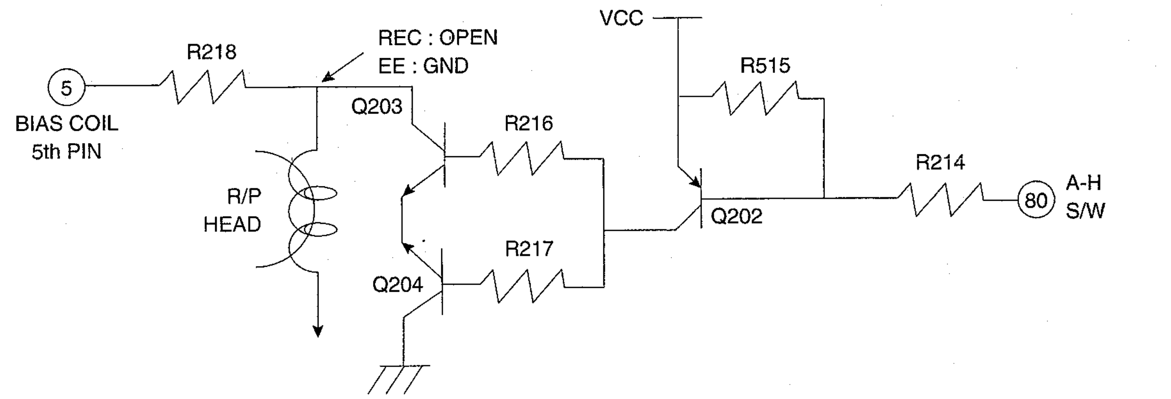
LA71511M has 3-input VIDEO/AUDIO switching circuitry internally, and its switching is controlled by the serial data dispatched from MICOM.
But for the suitable operation to these models, only 2 inputs are used. The AUDIO signal divided by the resistor, R204 and R205, is supplied to the 73rd pin of LA71511M. On the other hand, the signal divided by R206 and R207 is supplied to the 75th pin of LA71511M. Its level is automatically controlled by ALC and then the amplified signal through LINE AMP is obtained at the 77th pin.
The signal from C208 is supplied to REC AMP after the divider circuit (R208, R209, R210) and also to the LINE OUT.
The ALC point can be adjusted by R208 and R209, the adjustment of which is closely related to the REC level in REC mode.
The ALC time can be adjusted by R203 and C202.

2. PB MODE

The PB signal picked up from AUDIO HEAD is firstly processed in the frequency characteristic compensator which is composed of R220 and C214 (EP : C214+C215) and then supplied to the 7th pin.
The input signal passes through EQ AMP, and LINE AMP, so its output signal is finally obtained from the 77th pin.
The circuitry and its operation of EQ AMP is identical to the conventional EQ AMP.

3. REC MODE

1) AUDIO SWITCHING CIRCUIT
When the AUDIO S/W signal at the 80th pin is "H", the point at the AUDIO HEAD of the external switching circuit is opened electrically (EE/PB=GND), so the COIL starts to oscillate.



External Switching Circuit

2) As long as the voltage difference between VCC and the 5th pin is maintained at 2.0~4.3V, the COIL oscillates. In other words, the COIL maintains to oscillate only if the voltage at the 5th pin is 0.7~3.0Vp-p.
Especially, when the R/P and FE HEAD impedance is at the center, The voltage at the 5th pin should be maintained at 1.85Vp-p, and, if not, when the HEAD impedance is MAX or MIN, the voltage at the 5th pin is liable to deviate the ranges of 0.7~3.0Vp-p.
The higher the FE HEAD impedance is or the lower the R/P HEAD impedance is, the higher the voltage at the 5th pin increases.
The AC signal is put on the DC voltage at the 5th pin, and it shows the internal AUTO BIASing.
The control signal at the 6th pin controls the TR(Q205) to ON/OFF, by which the AUTO BIASing is controlled.

3) The output AUDIO signal at the 1st pin through REC AMP is recorded on HEAD after being mixed with the 70KHz AC BIAS signal.

At the same time, the output AUDIO signal is supplied to the 3rd pin and then filtered by 60KHz HPF, so only the 70KHz AC BIAS signal is passed.

The pure 70KHz AC BIAS signal is then compared to the voltage of 440mV at the comparator, so the AC BIAS signal is controlled to maintain at 440mV.

4) The recording current is determined by the 440mVrms BIAS signal and the resistance between the 1st and the 3rd pin.

* The method to set the recording current.

BIAS = 440mVrms ÷ the resistance between the 1st and the 3rd pin.

ex) 440mVrms ÷ 1.3K OHM = 338μA

where, only the low error, G type resistor should be used here.

As a rule of thumb, the resistance between the 1st and the 3rd pin should range from 1.0 ohm to 2.2K ohm.

5) The conventional AUDIO circuitry uses a peaking COIL to enhance the high frequency region, but the LA71511M uses the resistance of R/P HEAD.

Accordingly, The resistor and the capacitor is used to fit the frequency characteristics.

4. BIAS COIL

For normal operation of AUTO BIAS, the oscillating voltage of R/P HEAD is over 40Vp-p, A/E HEAD is over 20Vp-p, and the FE HEAD is over 40Vp-p.

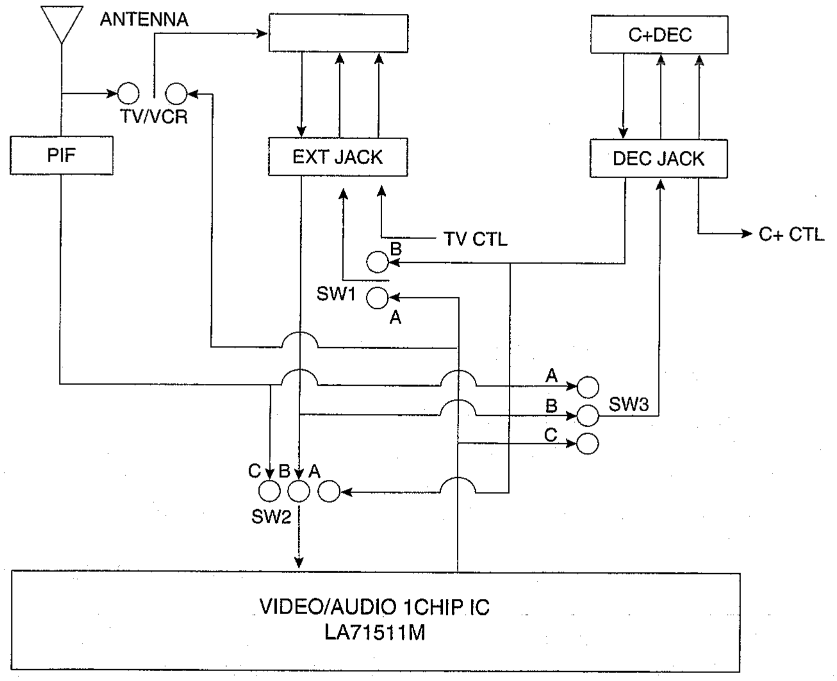
Especially, the erasing current of F/E HEAD ranges from 130 to 280mA, and it should be 180mA when the HEAD impedance is at the center.

3-6. FEATURES AND FUNCTIONS OF VIDEO/AUDIO SWITCHING IC

1. BH7634AS : SECAM, PAL VIDEO/AUDIO SWITCHING IC

1) Two three-inputs and one-output VIDEO/AUDIO SWITCH
3) Built-in 75Ω driver
3) Four video inputs consist of SYNC tip clamp
4) This has mute function and I^{2}C-BUS control

2. BLOCK DIAGRAM (BH7634AS)



Block Diagram (BH7634AS)

3. I²C-BUS CONTROL MODE

1) I²C-BUS FORMAT

S	SLAVE ADDRESS	A	DATA 1	A	DATA 2	A	P

- S : START CONDITION
- SLAVE ADDRESS : (MSB) 1 0 0 0 0 0 1 0 (LSB)
- DATA 1, 2 : DATA BYTE

(MSB) FIRST BYTE (LSB)

D9	D8	D7	D6	D5	D4	D3	D2

(MSB) SECOND BYTE (LSB)

D1	D0	0	0	0	0	0	0

2) CONTROL MODE

- SW1(D9) → H: A, L : B
- SW2 (D8, D7) → HH : A, HL : A, LH : B, LL : C
- SW3 (D6, D5) → HH : A, HL : A, LH : B, LL : C
- MUTE (D2) → H : MUTE, L : NORMAL

4. SWITCHING OPERATION

1) DECODER MODE

MODE	TV/VCR	TV/LINE	REC	C+ MEM	C+	SW1	SW2	SW3	TV CTL	REMARK
POWER OFF	-	TV	-	-	NO	A	C	B	L	
					YES	B	C	B	H	
	-	LINE	-	-	NO	A	B	B	L	
					YES	B	A	B	H	
PLAY	TV	-	-	-	NO	A	C	B	L	
					YES	B	C	B	H	
	VCR	-	-	-	-	A	C	A	H	
EE	TV	TV	NO REC	-	NO	A	C	B	L	CH SEARCH
					YES	B	C	B	H	
			REC	NO MEM	NO	A	C	B	L	
					YES	B	C	B	H	
				MEM	NO	A	C	A	L	
					YES	A	A	A	L	
		LINE	-	-	NO	A	B	B	L	
					YES	B	A	B	H	
	VCR	TV	-	-	NO	A	C	A	H	CH SEARCH
					YES	A	A	A	H	
		LINE	-	-	NO	A	B	B	H	
					YES	A	A	B	H	

2) 2nd SCART (AV MODE)

MODE	TV/VCR	TV/AV1/AV2	C+ (L)	SW1	SW2	SW3	TV CTL	REMARK
POWER OFF	-	TV	H	B	C	B	L	
			L	B	C	B	H	
	-	AV1	H	B	B	B	L	
			L	B	B	B	H	
	-	AV2	H	B	A	B	L	
			L	B	A	B	H	
PLAY	TV	-	-	A	C	B	L	
	VCR	-	-	A	C	B	H	
EE/REC	TV	TV	-	A	C	B	L	CH SEARCH
	VCR			A	C	B	H	CH SEARCH
	TV	AV1	-	A	B	B	L	
	VCR			A	B	B	H	
	TV	AV2	-	A	A	B	L	
	VCR			A	A	B	H	

3) 1 PERI MODE

MODE	TV/VCR	TV/LINE	INT SW	TV CTL	REMARK
POWER OFF	-	TV	INPUT 3	L	
		LINE	INPUT 2		
PLAY	TV	-	-	L	
	VCR			H	
EE/REC	TV	TV	INPUT 3	L	CH SEARCH
		LINE	INPUT 2		
	VCR	TV	INPUT 3	H	CH SEARCH
		LINE	INPUT 2		

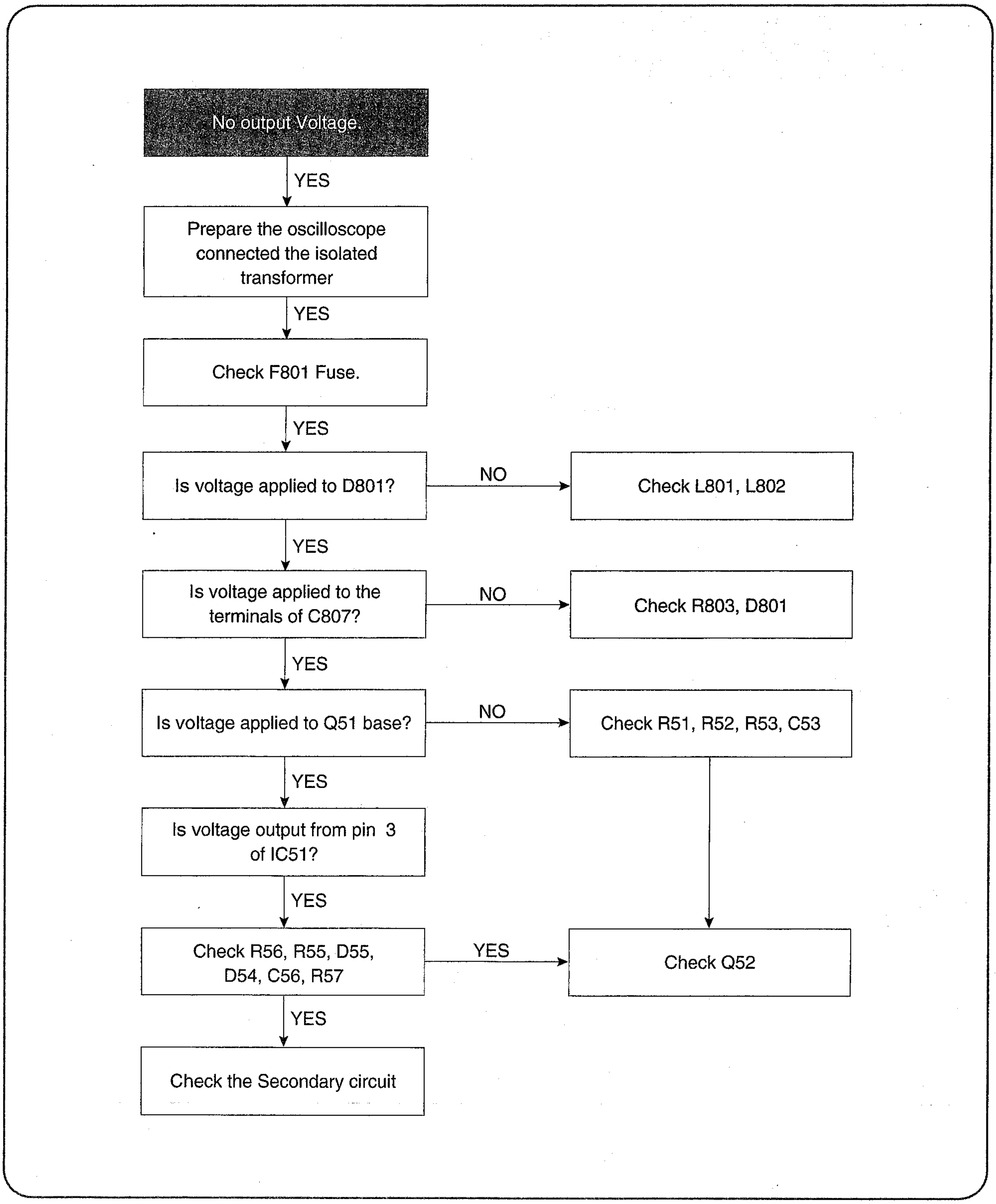
REMARKS) The internal switch of VIDEO/AUDIO 1chip IC(LA71511M) is fixed to input 2 for the case of 1) and 2) modes.
The whole switching operation is done in BH7634AS.
But for 3) mode case, the switching operation is done in VIDEO/AUDIO 1chip IC(LA71511M), since the BH7634AS IC is void in this case.

SECTION 4. TROUBLESHOOTING FLOW CHART

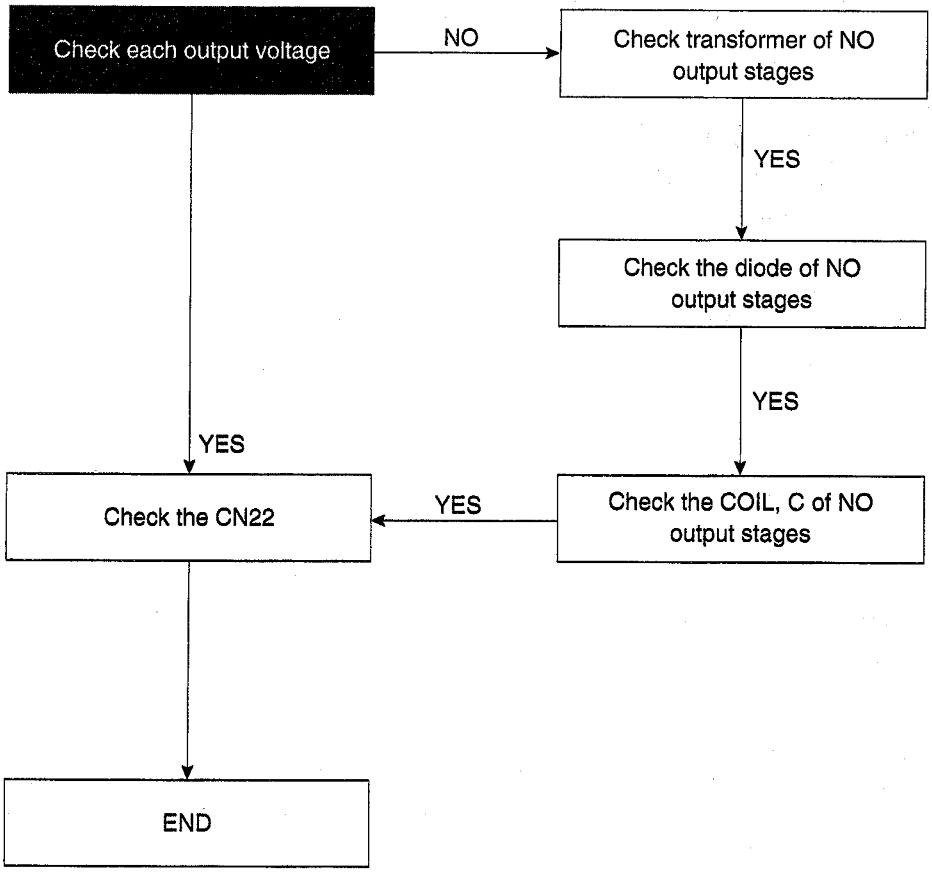
4-1. POWER CIRCUIT

When changing the parts which are broken first, remove the power plug from the socket and then discharge the voltage across the terminals of C807 (use an external KΩ resistance).
When check the primary circuit, Use the oscilloscope isolated properly (Use the isolated transformer) and connect GND to the primary GND, however it is not necessary to isolate the oscilloscope when check the secondary circuit.

A. CHECKING THE PRIMARY CIRCUIT.

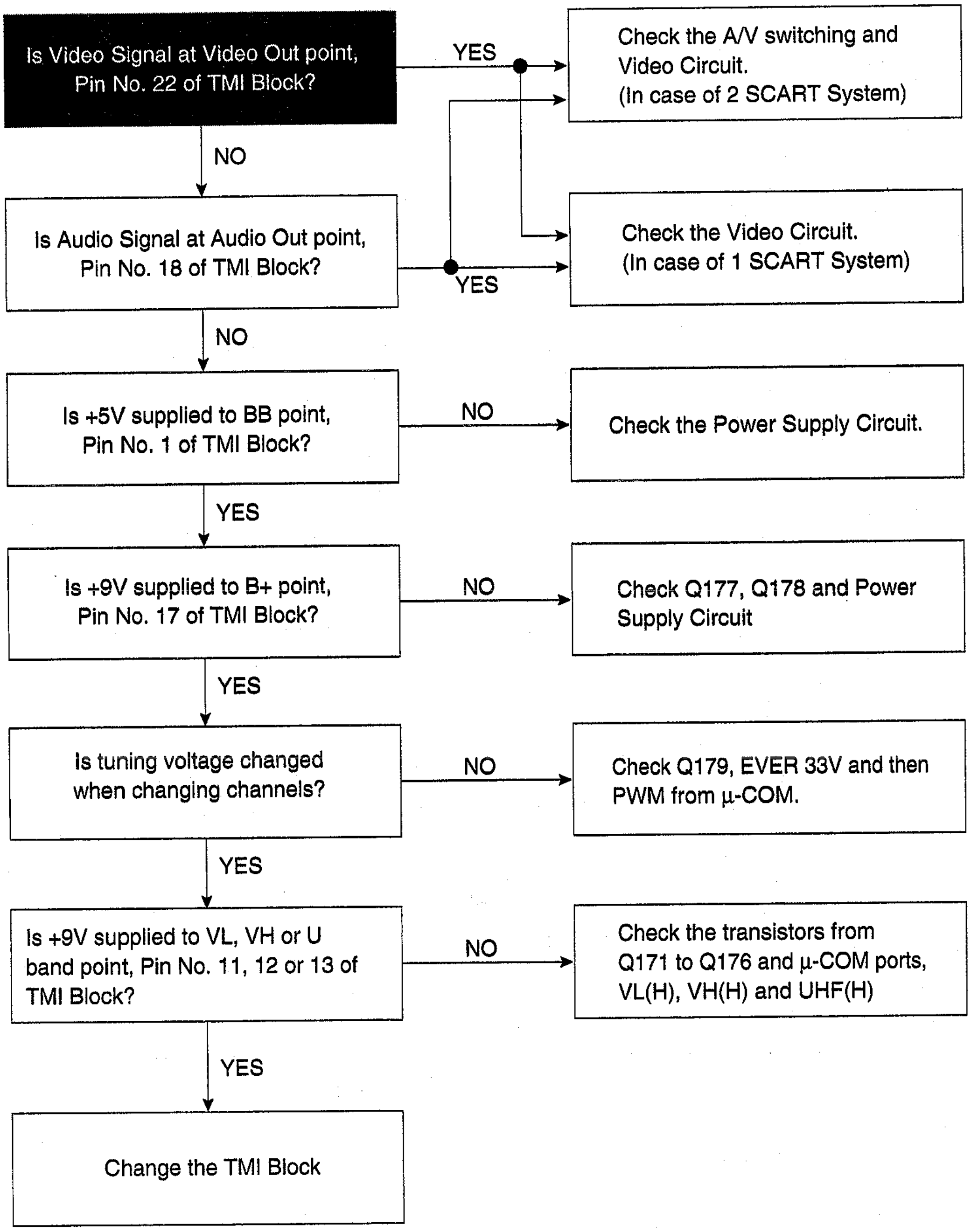

No output Voltage.
YES
Prepare the oscilloscope connected the isolated transformer
YES
Check F801 Fuse.
YES
Is voltage applied to D801?
NO
Check L801, L802
YES
Is voltage applied to the terminals of C807?
NO
Check R803, D801
YES
Is voltage applied to Q51 base?
NO
Check R51, R52, R53, C53
YES
Is voltage output from pin 3 of IC51?
YES
Check R56, R55, D55, D54, C56, R57
YES
Check Q52
YES
Check the Secondary circuit

B. CHECKING THE SECONDARY CIRCUIT


Check each output voltage
NO
Check transformer of NO output stages
YES
Check the diode of NO output stages
YES
YES
Check the CN22
YES
Check the COIL, C of NO output stages
END

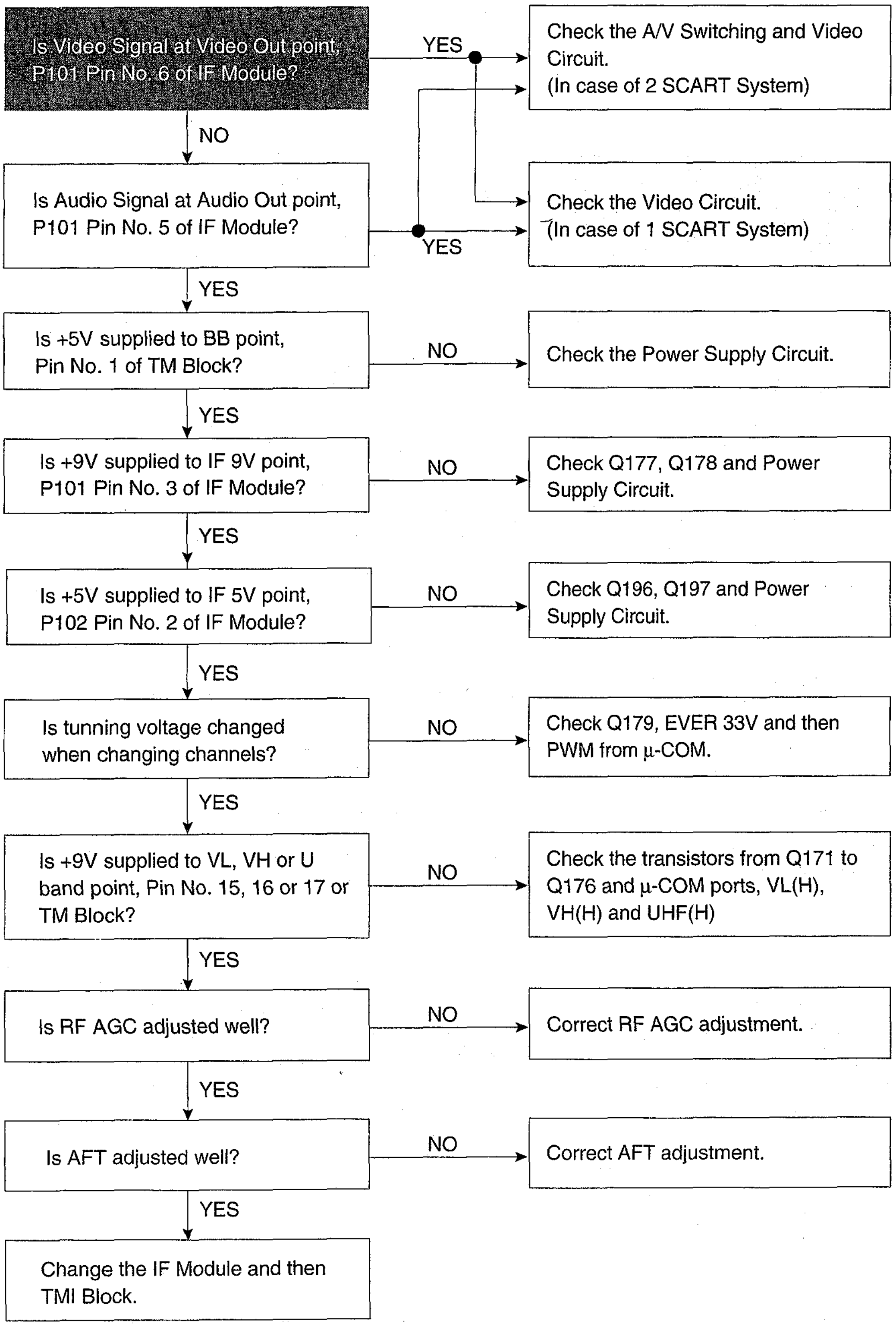
4-2. PIF CIRCUIT TROUBLESHOOTING

A. TORUBLESHOOTING OF RF RECEIVING CIRCUIT (FOR TMI APPLIED SYSTEM)

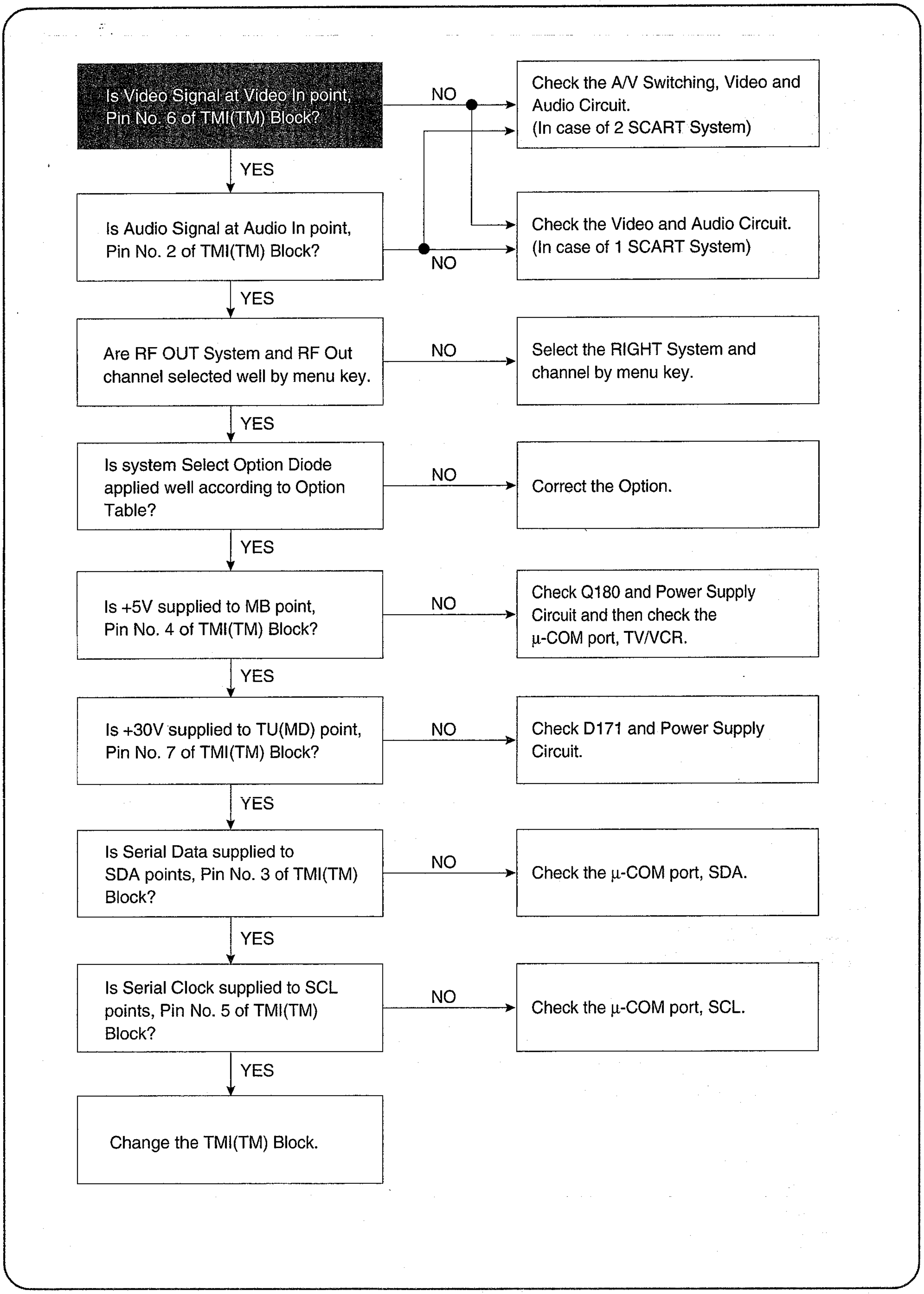


Is Video Signal at Video Out point, Pin No. 22 of TMI Block?
YES
Check the A/V switching and Video Circuit. (In case of 2 SCART System)
NO
Is Audio Signal at Audio Out point, Pin No. 18 of TMI Block?
YES
Check the Video Circuit. (In case of 1 SCART System)
NO
Is +5V supplied to BB point, Pin No. 1 of TMI Block?
NO
Check the Power Supply Circuit.
YES
Is +9V supplied to B+ point, Pin No. 17 of TMI Block?
NO
Check Q177, Q178 and Power Supply Circuit
YES
Is tuning voltage changed when changing channels?
NO
Check Q179, EVER 33V and then PWM from µ-COM.
YES
Is +9V supplied to VL, VH or U band point, Pin No. 11, 12 or 13 of TMI Block?
NO
Check the transistors from Q171 to Q176 and µ-COM ports, VL(H), VH(H) and UHF(H)
YES
Change the TMI Block

B. TORUBLESHOOTING OF RF RECEIVING CIRCUIT (FOR TM APPLIED SYSTEM)

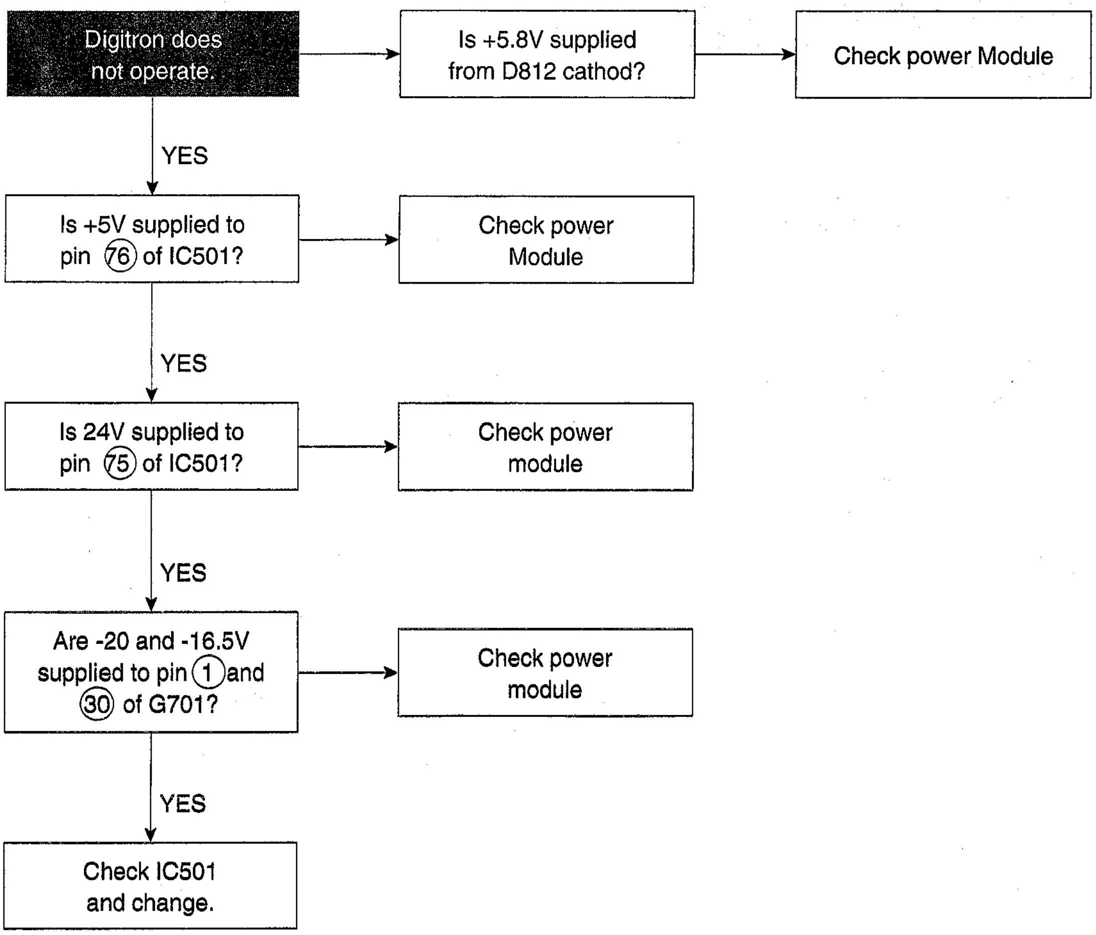

Is Video Signal at Video Out point, P101 Pin No. 6 of IF Module?
YES
Check the A/V Switching and Video Circuit. (In case of 2 SCART System)
NO
Is Audio Signal at Audio Out point, P101 Pin No. 5 of IF Module?
YES
Check the Video Circuit. (In case of 1 SCART System)
YES
Is +5V supplied to BB point, Pin No. 1 of TM Block?
NO
Check the Power Supply Circuit.
YES
Is +9V supplied to IF 9V point, P101 Pin No. 3 of IF Module?
NO
Check Q177, Q178 and Power Supply Circuit.
YES
Is +5V supplied to IF 5V point, P102 Pin No. 2 of IF Module?
NO
Check Q196, Q197 and Power Supply Circuit.
YES
Is tunning voltage changed when changing channels?
NO
Check Q179, EVER 33V and then PWM from μ-COM.
YES
Is +9V supplied to VL, VH or U band point, Pin No. 15, 16 or 17 or TM Block?
NO
Check the transistors from Q171 to Q176 and μ-COM ports, VL(H), VH(H) and UHF(H)
YES
Is RF AGC adjusted well?
NO
Correct RF AGC adjustment.
YES
Is AFT adjusted well?
NO
Correct AFT adjustment.
YES
Change the IF Module and then TMI Block.

C. TROUBLESHOOTING OF RF MODULATOR OUT

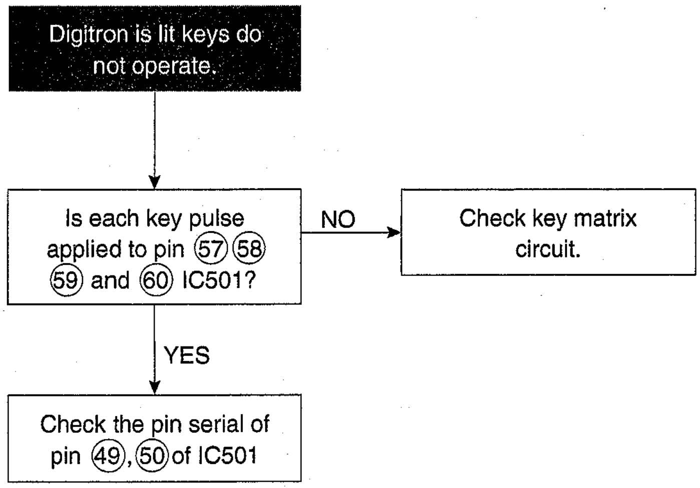

Is Video Signal at Video In point, Pin No. 6 of TMI(TM) Block?
NO
Check the A/V Switching, Video and Audio Circuit. (In case of 2 SCART System)
YES
Is Audio Signal at Audio In point, Pin No. 2 of TMI(TM) Block?
NO
Check the Video and Audio Circuit. (In case of 1 SCART System)
YES
Are RF OUT System and RF Out channel selected well by menu key.
NO
Select the RIGHT System and channel by menu key.
YES
Is system Select Option Diode applied well according to Option Table?
NO
Correct the Option.
YES
Is +5V supplied to MB point, Pin No. 4 of TMI(TM) Block?
NO
Check Q180 and Power Supply Circuit and then check the µ-COM port, TV/VCR.
YES
Is +30V supplied to TU(MD) point, Pin No. 7 of TMI(TM) Block?
NO
Check D171 and Power Supply Circuit.
YES
Is Serial Data supplied to SDA points, Pin No. 3 of TMI(TM) Block?
NO
Check the µ-COM port, SDA.
YES
Is Serial Clock supplied to SCL points, Pin No. 5 of TMI(TM) Block?
NO
Check the µ-COM port, SCL.
YES
Change the TMI(TM) Block.

4-3. LOGIC CIRCUIT

A.

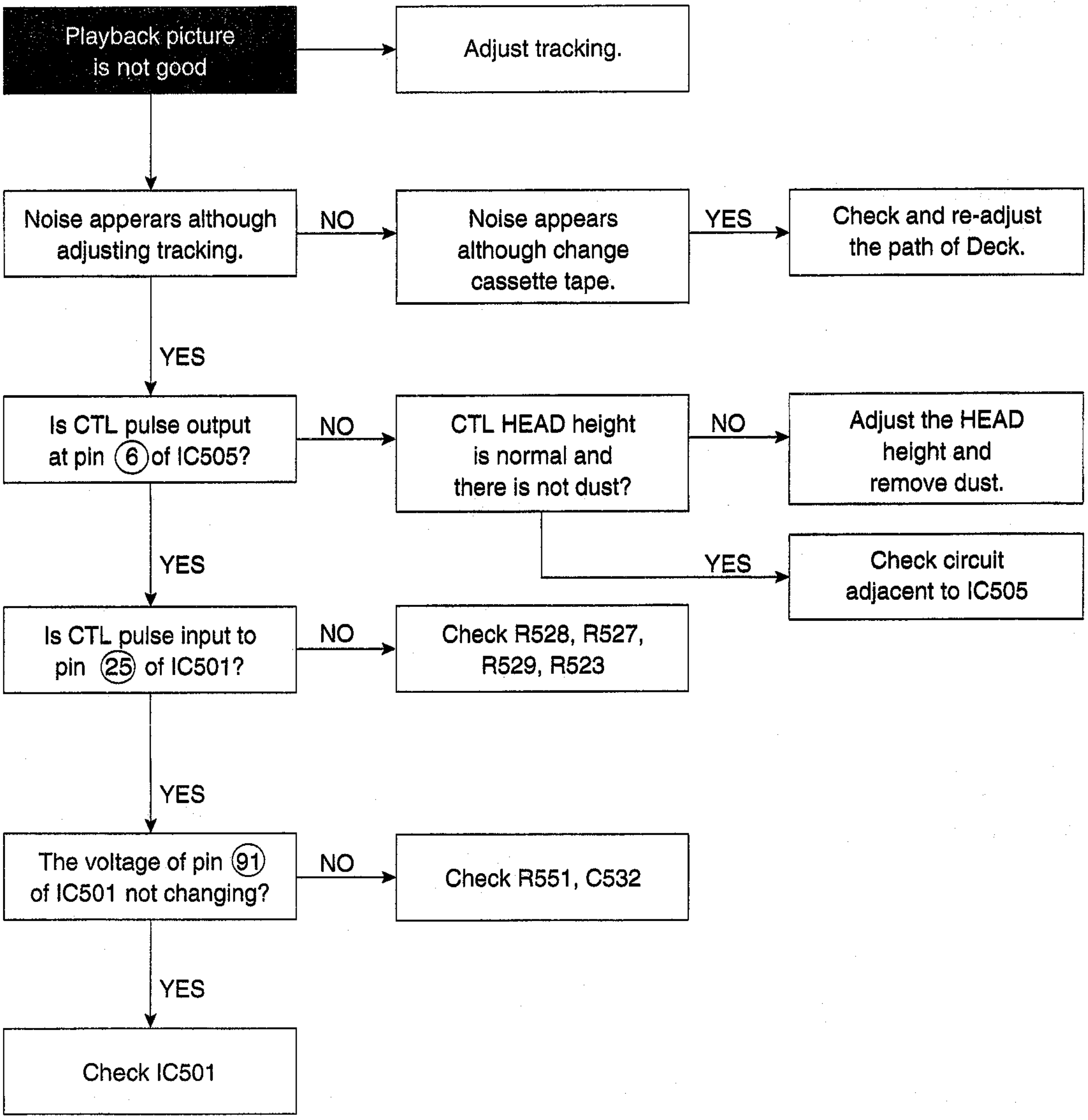

Digitron does not operate.
Is +5.8V supplied from D812 cathod?
Check power Module
YES
Is +5V supplied to pin ⑯ of IC501?
Check power Module
YES
Is 24V supplied to pin ⑮ of IC501?
Check power module
YES
Are -20 and -16.5V supplied to pin ① and ㉚ of G701?
Check power module
YES
Check IC501 and change.

B.

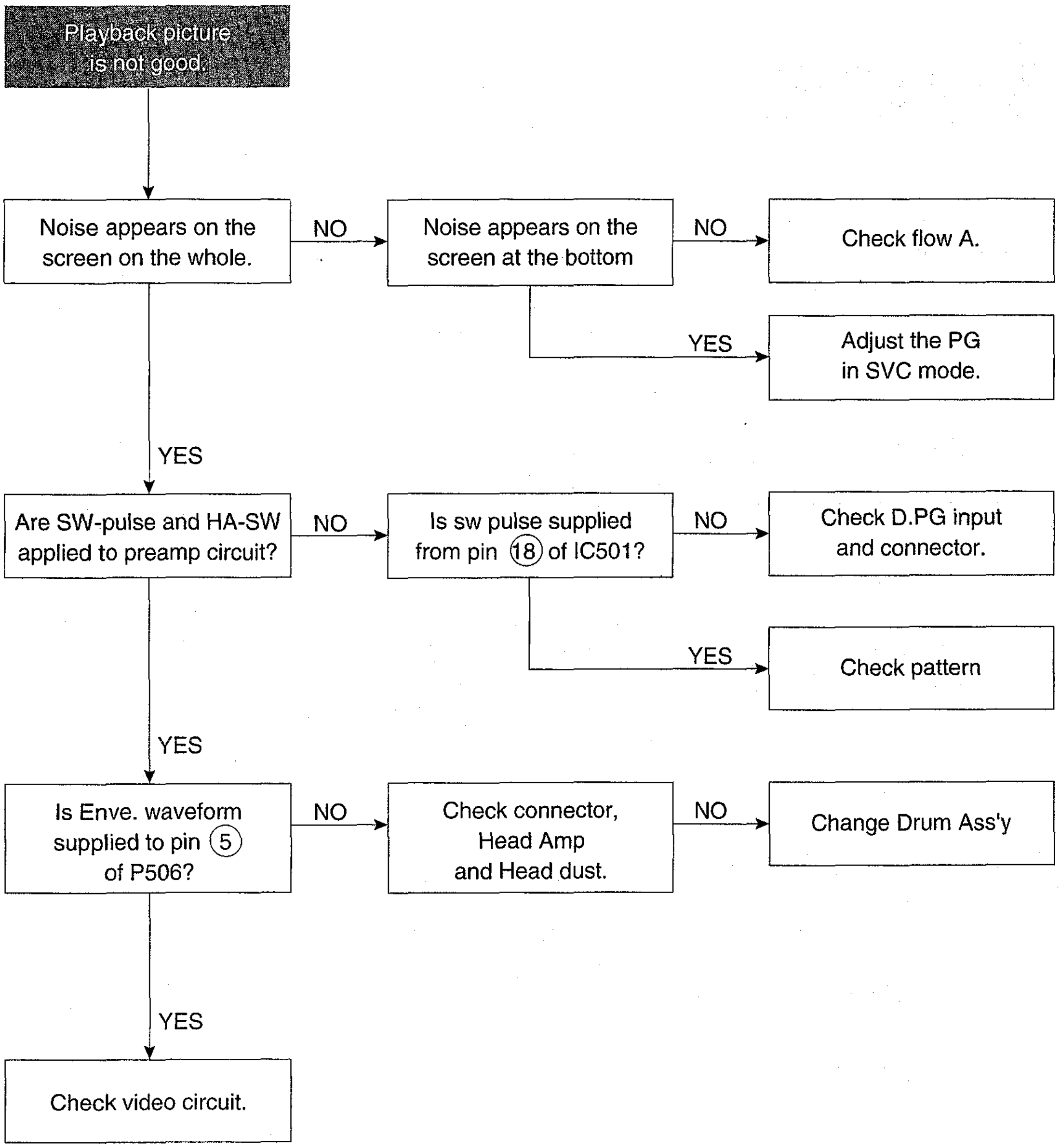

Digitron is lit keys do not operate.
Is each key pulse applied to pin ㊲㊳ ㊴ and (60) IC501?
NO
Check key matrix circuit.
YES
Check the pin serial of pin ㊾, ㊿ of IC501

4-4. SERVO-SYSCON CIRCUIT

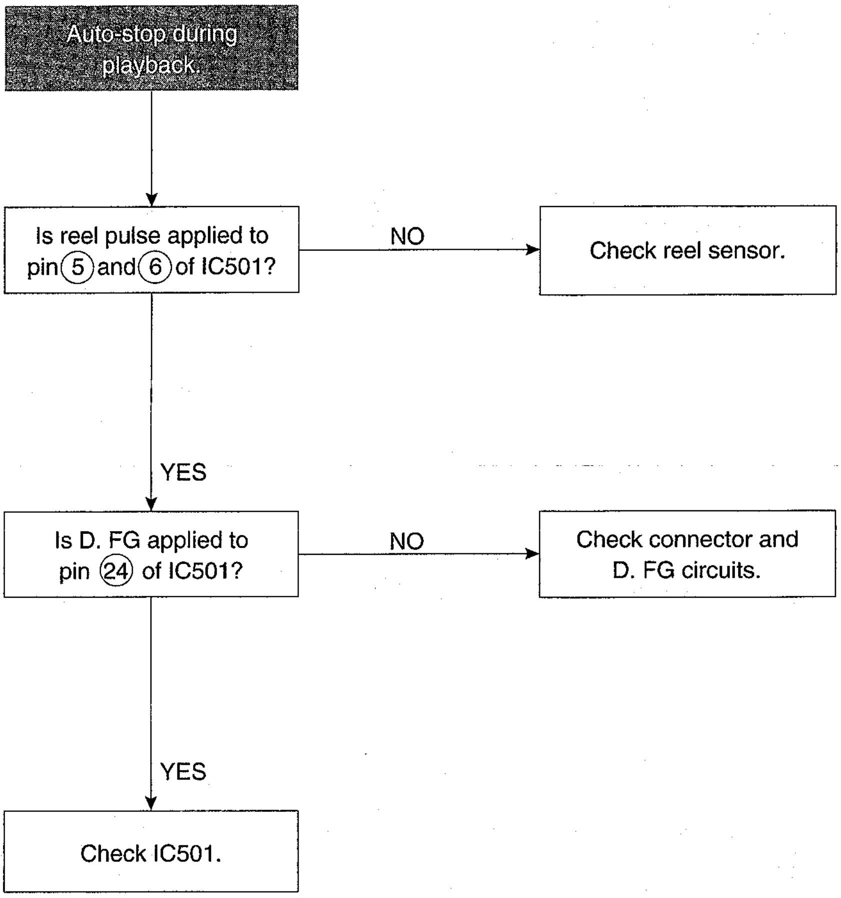
A.


Playback picture is not good
Adjust tracking.
Noise apperars although adjusting tracking.
NO
Noise appears although change cassette tape.
YES
Check and re-adjust the path of Deck.
YES
Is CTL pulse output at pin ⑥ of IC505?
NO
CTL HEAD height is normal and there is not dust?
NO
Adjust the HEAD height and remove dust.
YES
Check circuit adjacent to IC505
YES
Is CTL pulse input to pin ㉕ of IC501?
NO
Check R528, R527, R529, R523
YES
The voltage of pin (91) of IC501 not changing?
NO
Check R551, C532
YES
Check IC501

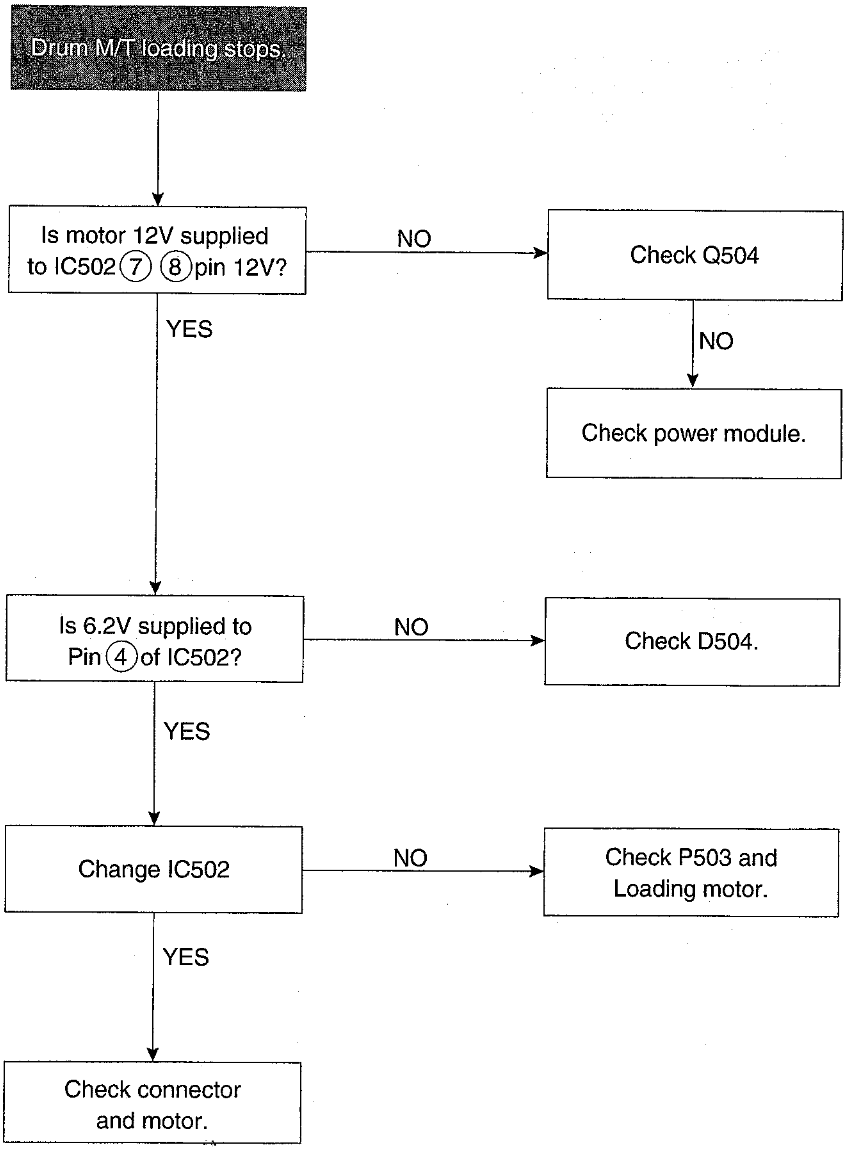
B.


Playback picture is not good.
Noise appears on the screen on the whole.
NO
Noise appears on the screen at the bottom
NO
Check flow A.
YES
Adjust the PG in SVC mode.
YES
Are SW-pulse and HA-SW applied to preamp circuit?
NO
Is sw pulse supplied from pin ⑱ of IC501?
NO
Check D.PG input and connector.
YES
Check pattern
YES
Is Enve. waveform supplied to pin ⑤ of P506?
NO
Check connector, Head Amp and Head dust.
NO
Change Drum Ass'y
YES
Check video circuit.

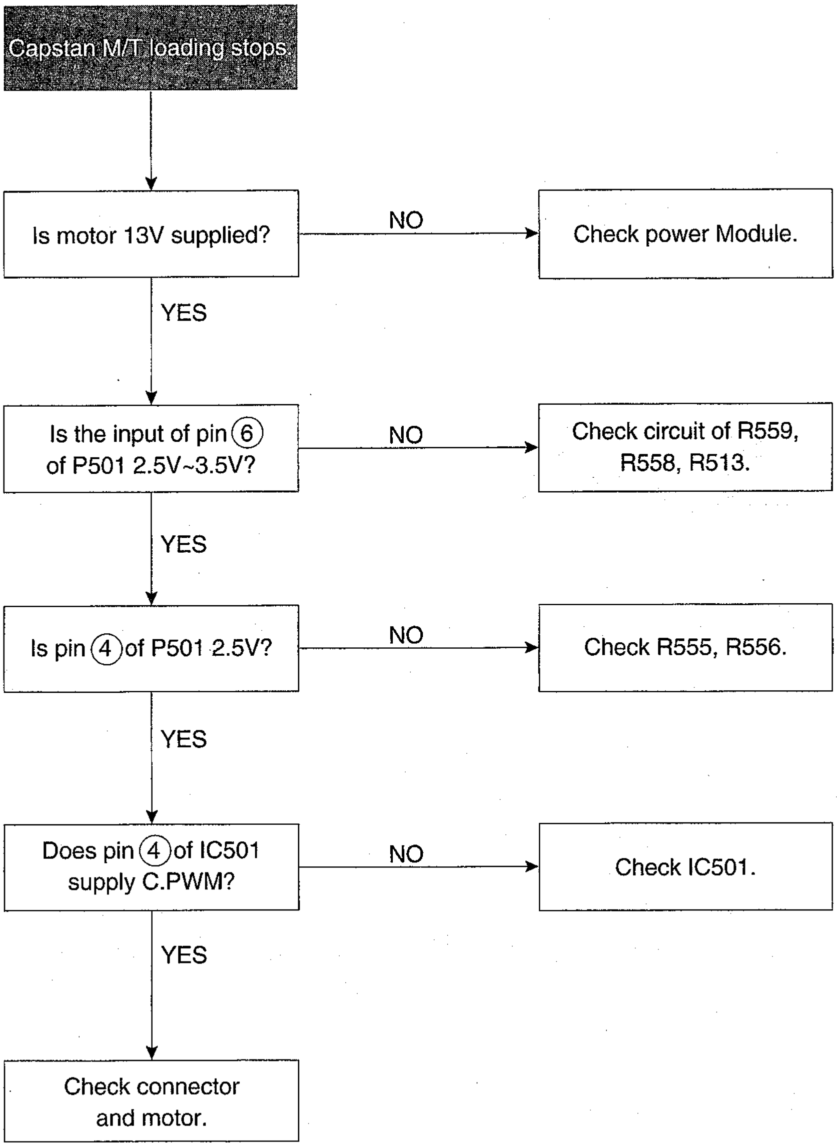
C.


Auto-stop during playback.
Is reel pulse applied to pin ⑤ and ⑥ of IC501?
NO
Check reel sensor.
YES
Is D. FG applied to pin ㉔ of IC501?
NO
Check connector and D. FG circuits.
YES
Check IC501.

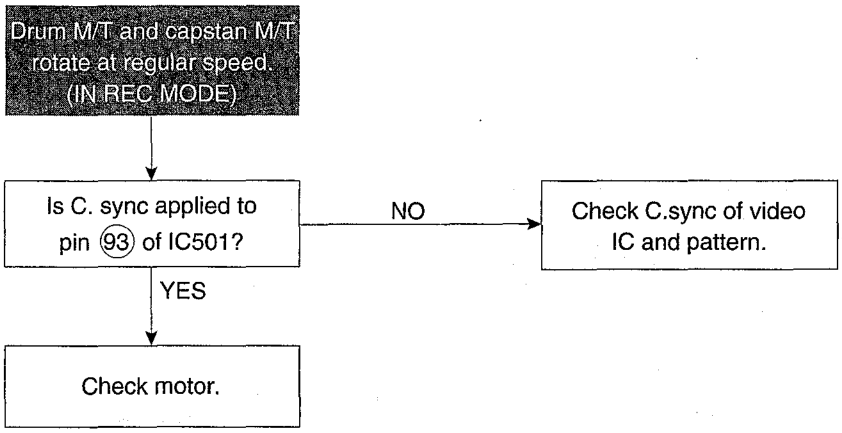
D.


Drum M/T loading stops.
Is motor 12V supplied to IC502 ⑦ ⑧ pin 12V?
NO
Check Q504
NO
Check power module.
YES
Is 6.2V supplied to Pin ④ of IC502?
NO
Check D504.
YES
Change IC502
NO
Check P503 and Loading motor.
YES
Check connector and motor.

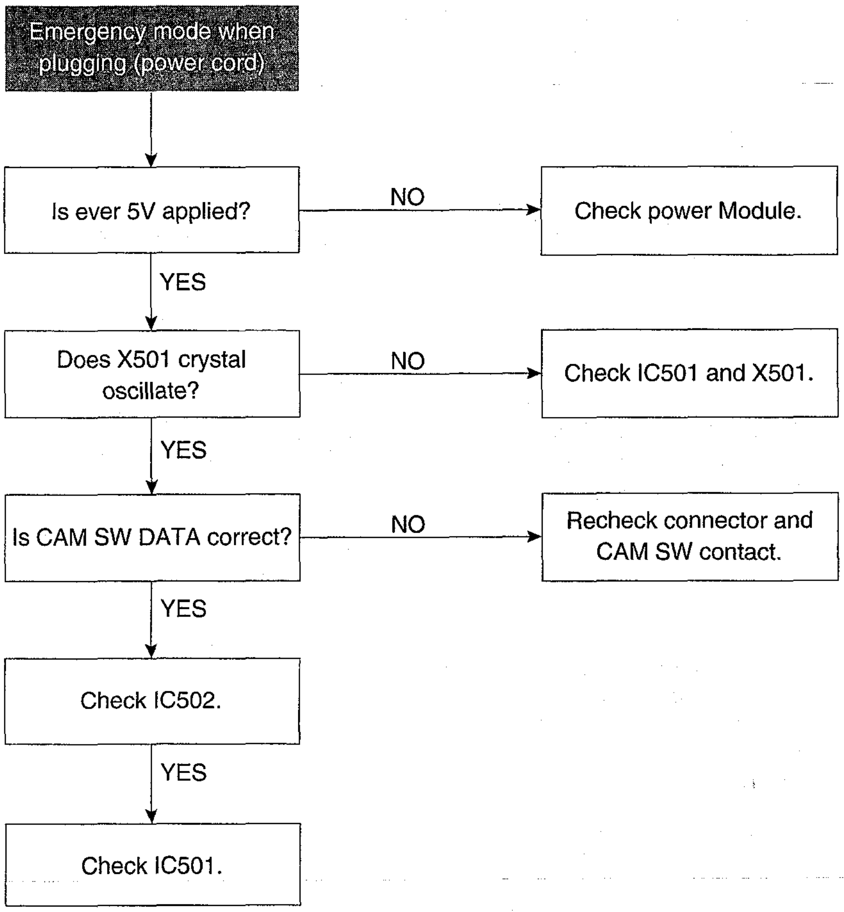
E.


Capstan M/T loading stops
Is motor 13V supplied?
NO
Check power Module.
YES
Is the input of pin ⑥ of P501 2.5V~3.5V?
NO
Check circuit of R559, R558, R513.
YES
Is pin ④ of P501 2.5V?
NO
Check R555, R556.
YES
Does pin ④ of IC501 supply C.PWM?
NO
Check IC501.
YES
Check connector and motor.

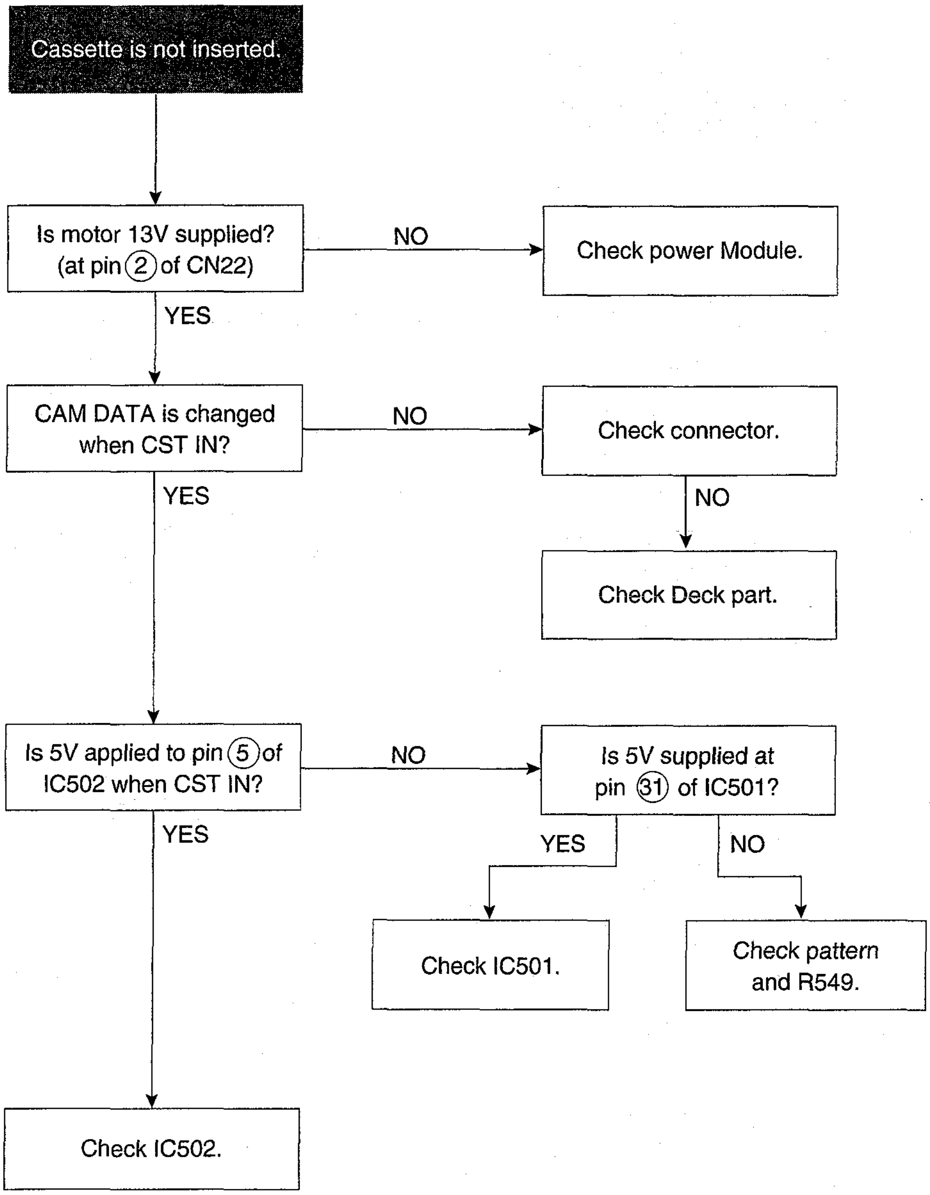
F.


Drum M/T and capstan M/T rotate at regular speed. (IN REC MODE)
Is C. sync applied to pin ㊾ of IC501?
NO
Check C.sync of video IC and pattern.
YES
Check motor.

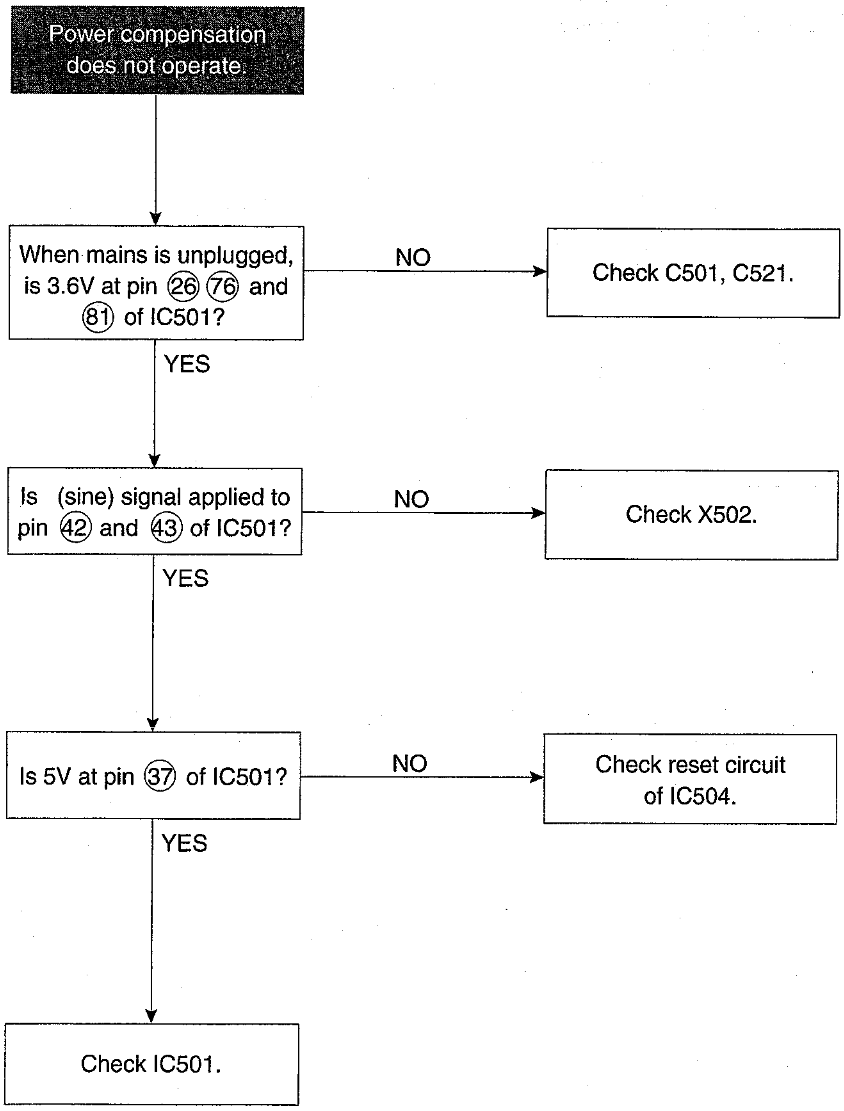
G.


Emergency mode when plugging (power cord)
Is ever 5V applied?
NO
Check power Module.
YES
Does X501 crystal oscillate?
NO
Check IC501 and X501.
YES
Is CAM SW DATA correct?
NO
Recheck connector and CAM SW contact.
YES
Check IC502.
YES
Check IC501.

H.

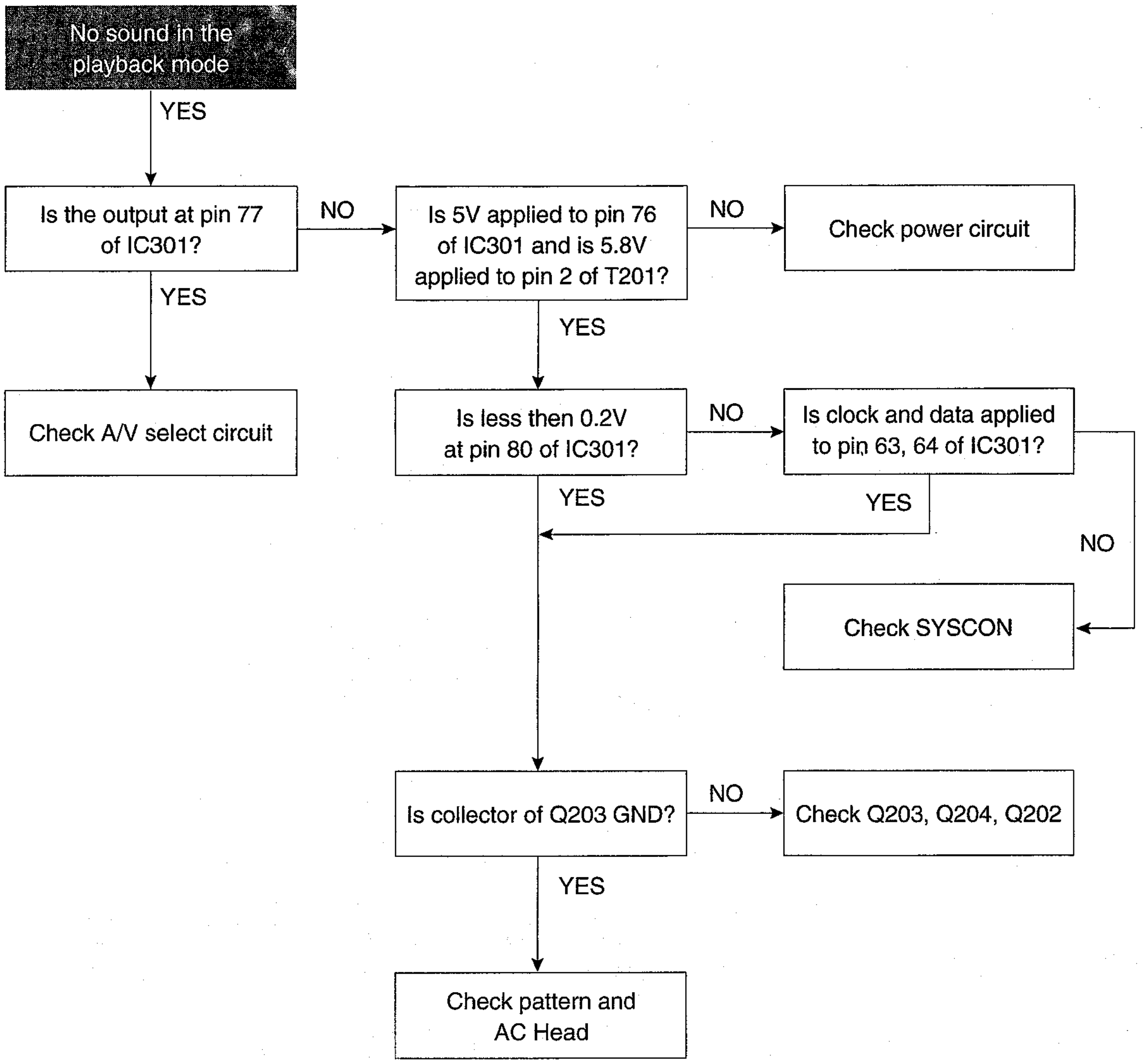

Cassette is not inserted.
Is motor 13V supplied? (at pin ② of CN22)
NO
Check power Module.
YES
CAM DATA is changed when CST IN?
NO
Check connector.
NO
Check Deck part.
YES
Is 5V applied to pin ⑤ of IC502 when CST IN?
NO
Is 5V supplied at pin (31) of IC501?
YES
NO
Check IC501.
Check pattern and R549.
YES
Check IC502.

I.


Power compensation does not operate.
When mains is unplugged, is 3.6V at pin ㉖ ㊻ and 81 of IC501?
NO
Check C501, C521.
YES
Is (sine) signal applied to pin ㊷ and ㊸ of IC501?
NO
Check X502.
YES
Is 5V at pin ㊲ of IC501?
NO
Check reset circuit of IC504.
YES
Check IC501.

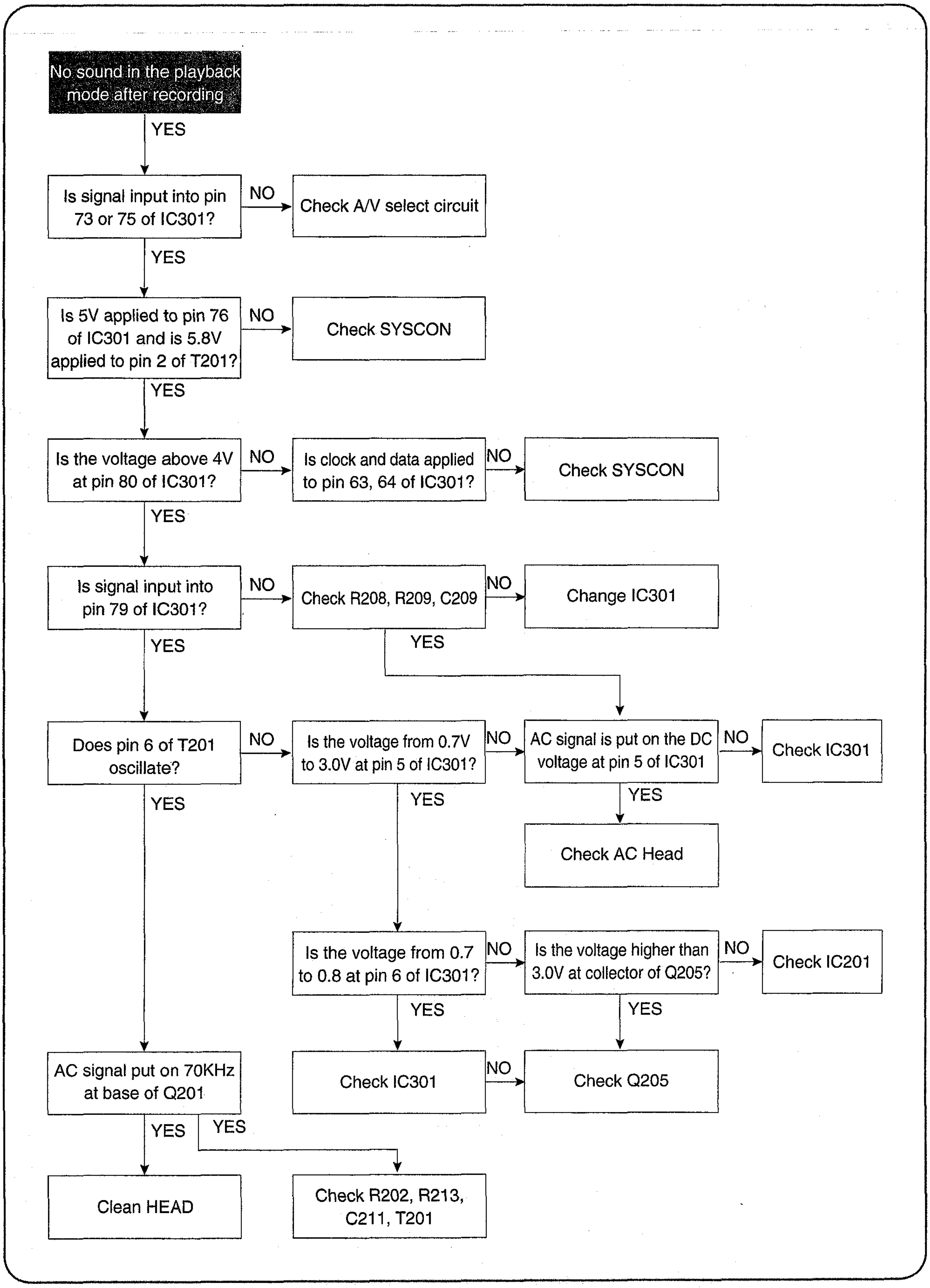
4-5. AUDIO CIRCUIT (NORMAL)

A. TROUBLESHOOTING OF PB MODE.

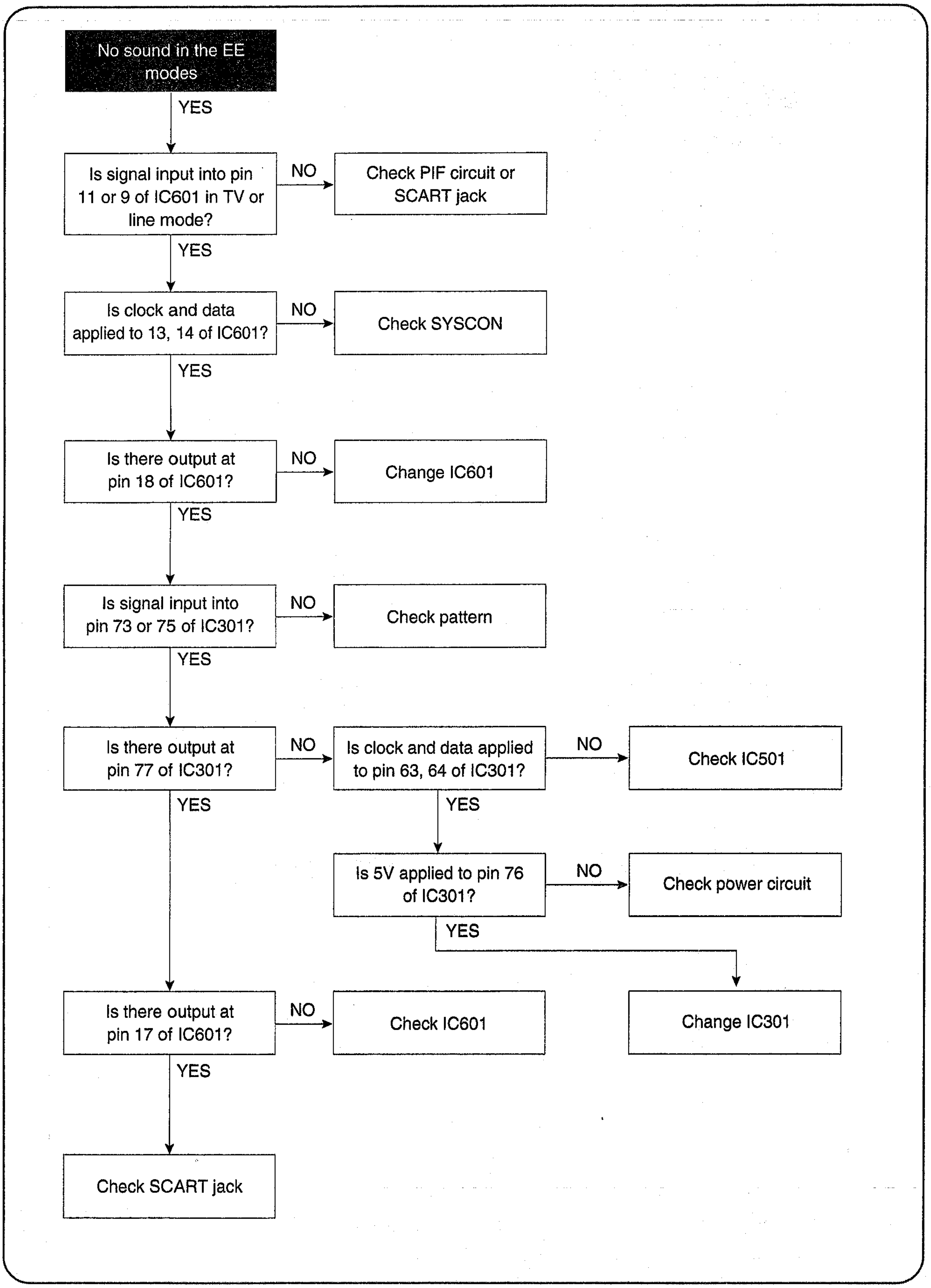


No sound in the playback mode
YES
Is the output at pin 77 of IC301?
NO
Is 5V applied to pin 76 of IC301 and is 5.8V applied to pin 2 of T201?
NO
Check power circuit
YES
Check A/V select circuit
YES
Is less then 0.2V at pin 80 of IC301?
NO
Is clock and data applied to pin 63, 64 of IC301?
YES
YES
NO
Check SYSCON
Is collector of Q203 GND?
NO
Check Q203, Q204, Q202
YES
Check pattern and AC Head

B. TROUBLESHOOTING OF REC MODE.

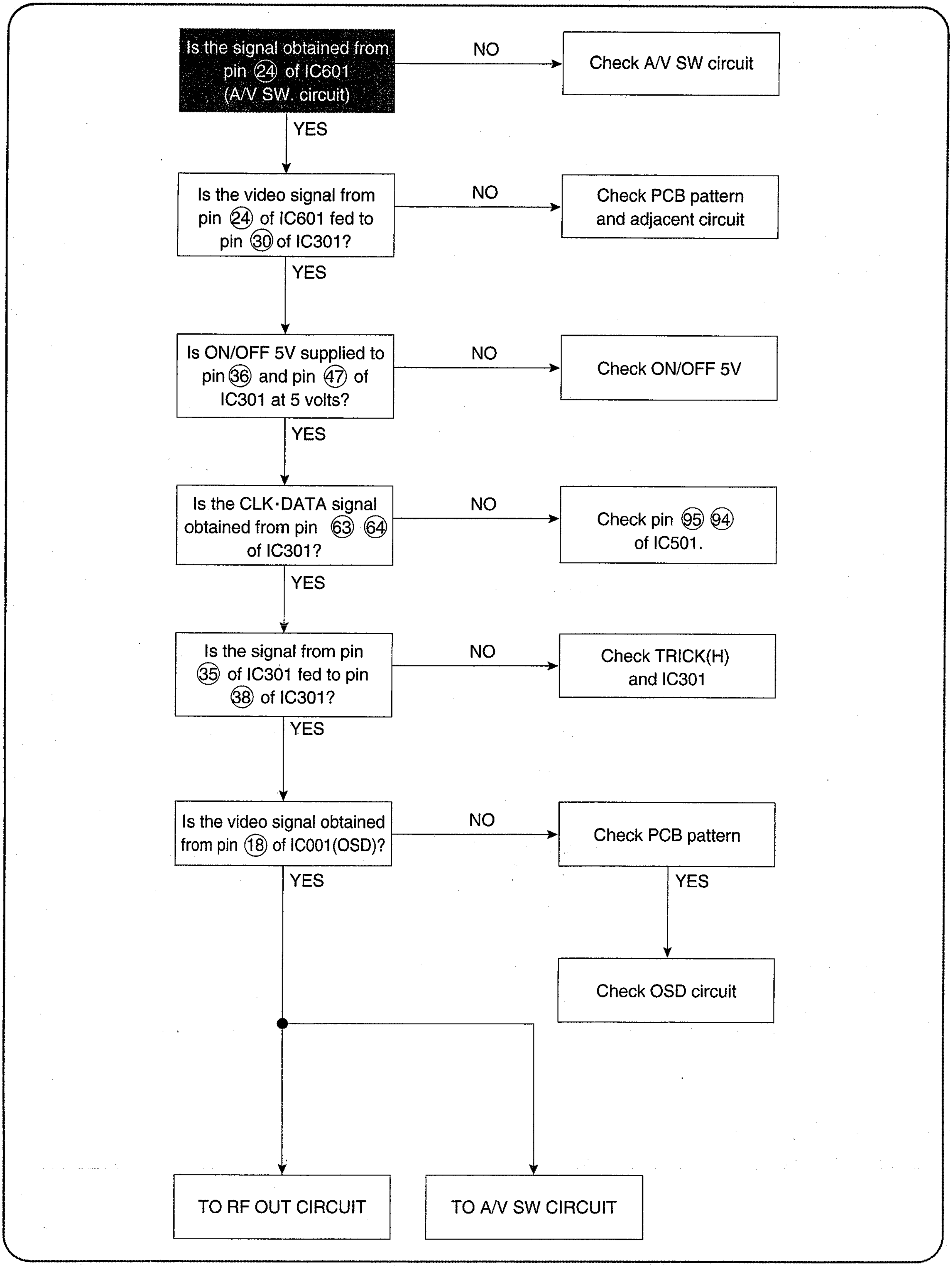

No sound in the playback mode after recording
YES
Is signal input into pin 73 or 75 of IC301?
NO
Check A/V select circuit
YES
Is 5V applied to pin 76 of IC301 and is 5.8V applied to pin 2 of T201?
NO
Check SYSCON
YES
Is the voltage above 4V at pin 80 of IC301?
NO
Is clock and data applied to pin 63, 64 of IC301?
NO
Check SYSCON
YES
Is signal input into pin 79 of IC301?
NO
Check R208, R209, C209
NO
Change IC301
YES
YES
Does pin 6 of T201 oscillate?
NO
Is the voltage from 0.7V to 3.0V at pin 5 of IC301?
NO
AC signal is put on the DC voltage at pin 5 of IC301
NO
Check IC301
YES
Check AC Head
YES
YES
Is the voltage from 0.7 to 0.8 at pin 6 of IC301?
NO
Is the voltage higher than 3.0V at collector of Q205?
NO
Check IC201
YES
YES
AC signal put on 70KHz at base of Q201
Check IC301
NO
Check Q205
YES
YES
Clean HEAD
Check R202, R213, C211, T201

C. TROUBLESHOOTING OF EE MODE.

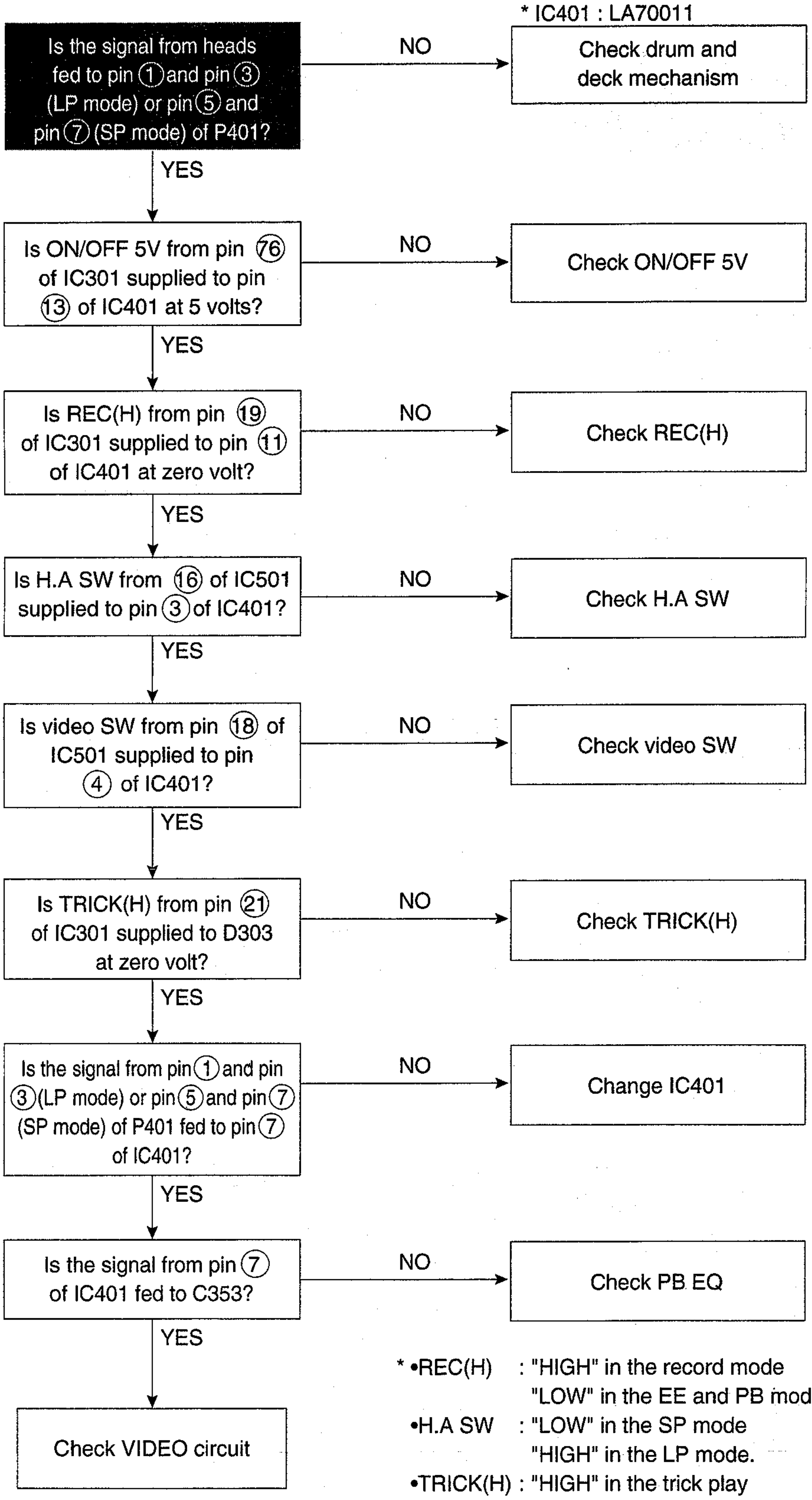

No sound in the EE modes
YES
Is signal input into pin 11 or 9 of IC601 in TV or line mode?
NO
Check PIF circuit or SCART jack
YES
Is clock and data applied to 13, 14 of IC601?
NO
Check SYSCON
YES
Is there output at pin 18 of IC601?
NO
Change IC601
YES
Is signal input into pin 73 or 75 of IC301?
NO
Check pattern
YES
Is there output at pin 77 of IC301?
NO
Is clock and data applied to pin 63, 64 of IC301?
NO
Check IC501
YES
Is 5V applied to pin 76 of IC301?
NO
Check power circuit
YES
Change IC301
YES
Is there output at pin 17 of IC601?
NO
Check IC601
YES
Check SCART jack

4-6. VIDEO CIRCUIT

A. TROUBLESHOOTING OF EE MODE.


Is the signal obtained from pin ㉔ of IC601 (A/V SW. circuit)
NO
Check A/V SW circuit
YES
Is the video signal from pin ㉔ of IC601 fed to pin ㉚ of IC301?
NO
Check PCB pattern and adjacent circuit
YES
Is ON/OFF 5V supplied to pin ㊱ and pin ㊼ of IC301 at 5 volts?
NO
Check ON/OFF 5V
YES
Is the CLK·DATA signal obtained from pin (63) (64) of IC301?
NO
Check pin (95) (94) of IC501.
YES
Is the signal from pin ㉟ of IC301 fed to pin ㊳ of IC301?
NO
Check TRICK(H) and IC301
YES
Is the video signal obtained from pin ⑱ of IC001(OSD)?
NO
Check PCB pattern
YES
Check OSD circuit
YES
TO RF OUT CIRCUIT
TO A/V SW CIRCUIT

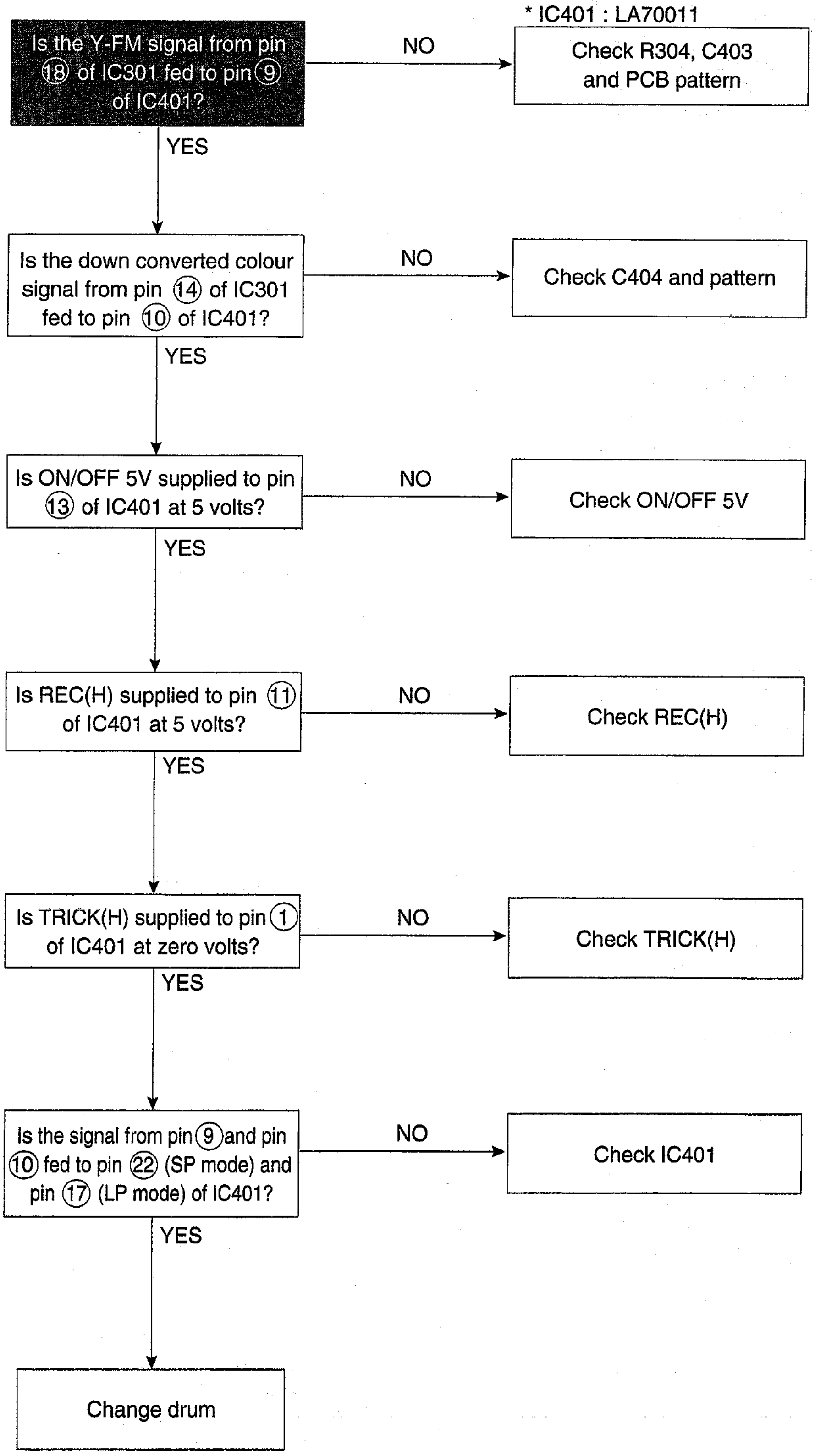
B. TROUBLESHOOTING OF PREAMP IN THE PLAYBACK MODE.


Is the signal from heads fed to pin ① and pin ③ (LP mode) or pin ⑤ and pin ⑦ (SP mode) of P401?
NO
Check drum and deck mechanism
YES
Is ON/OFF 5V from pin (76) of IC301 supplied to pin ⑬ of IC401 at 5 volts?
NO
Check ON/OFF 5V
YES
Is REC(H) from pin ⑲ of IC301 supplied to pin ⑪ of IC401 at zero volt?
NO
Check REC(H)
YES
Is H.A SW from ⑯ of IC501 supplied to pin ③ of IC401?
NO
Check H.A SW
YES
Is video SW from pin ⑱ of IC501 supplied to pin ④ of IC401?
NO
Check video SW
YES
Is TRICK(H) from pin ㉑ of IC301 supplied to D303 at zero volt?
NO
Check TRICK(H)
YES
Is the signal from pin ① and pin ③ (LP mode) or pin ⑤ and pin ⑦ (SP mode) of P401 fed to pin ⑦ of IC401?
NO
Change IC401
YES
Is the signal from pin ⑦ of IC401 fed to C353?
NO
Check PB EQ
YES
Check VIDEO circuit

* IC401 : LA70011

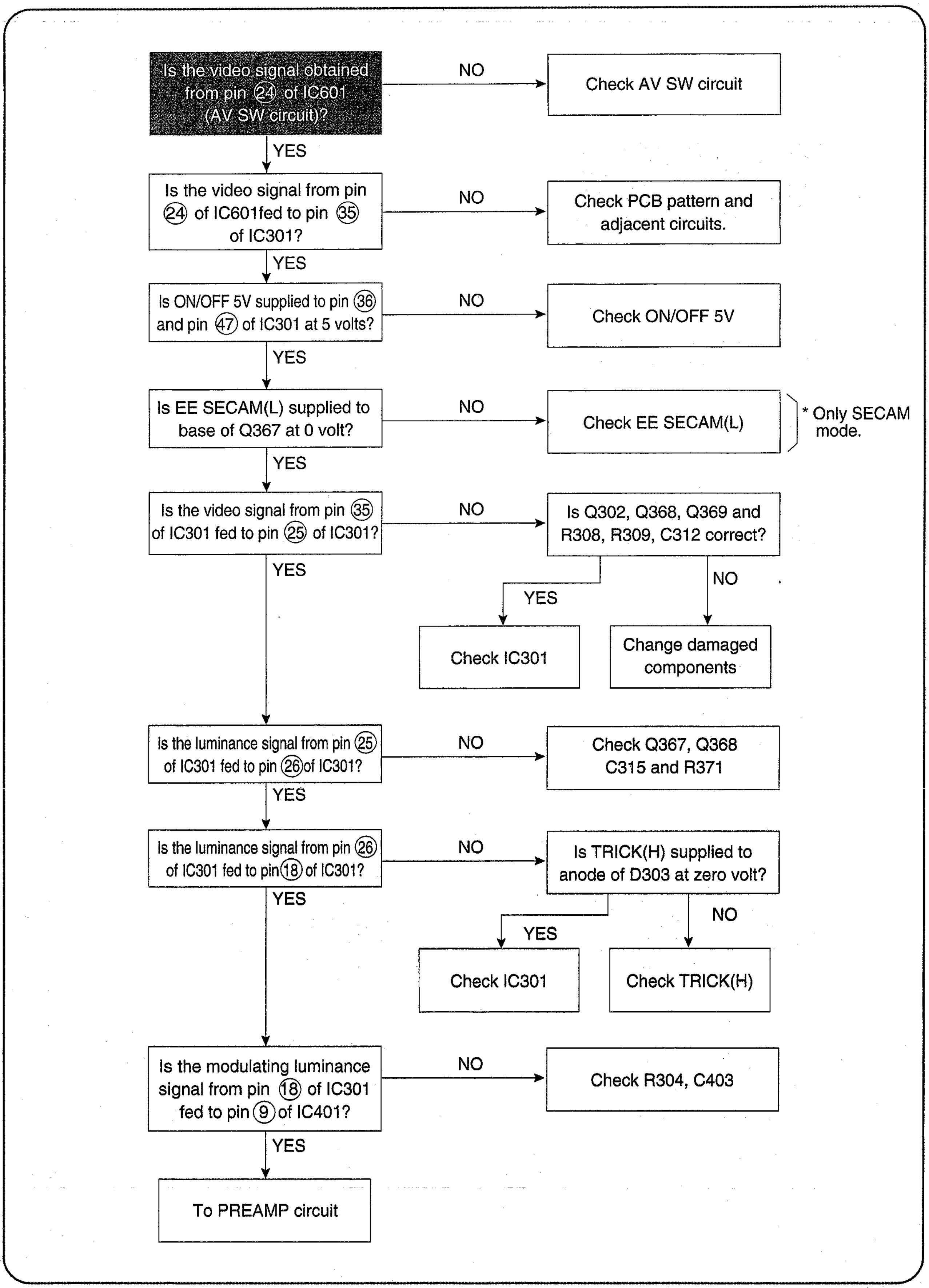
* •REC(H) : "HIGH" in the record mode
"LOW" in the EE and PB mode.
•H.A SW : "LOW" in the SP mode
"HIGH" in the LP mode.
•TRICK(H) : "HIGH" in the trick play
"LOW" except trick play.

C. TROUBLESHOOTING OF PREAMP CIRCUIT IN THE RECORD MODE.

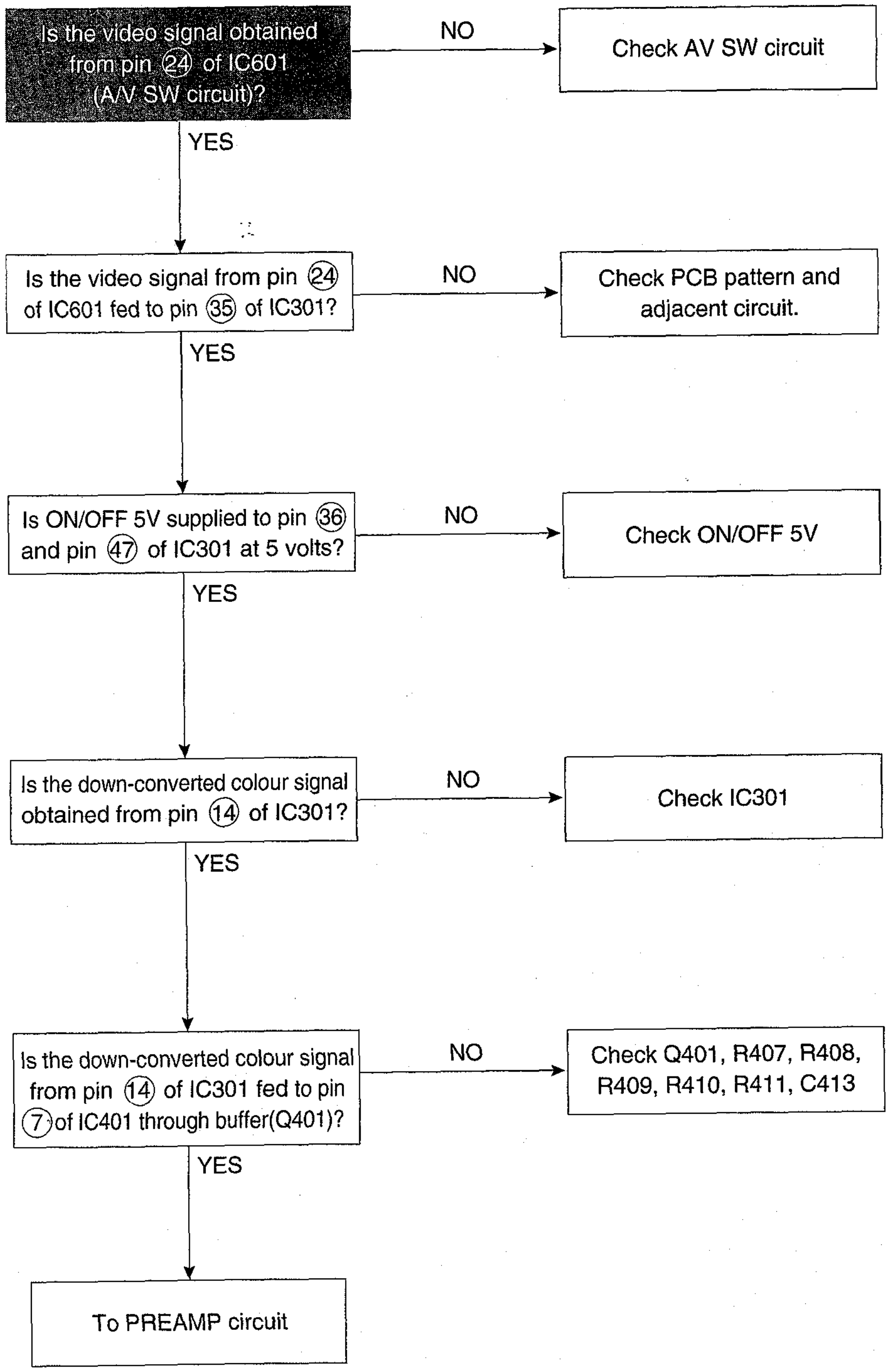

Is the Y-FM signal from pin ⑱ of IC301 fed to pin ⑨ of IC401?
NO
Check R304, C403 and PCB pattern
YES
Is the down converted colour signal from pin ⑭ of IC301 fed to pin ⑩ of IC401?
NO
Check C404 and pattern
YES
Is ON/OFF 5V supplied to pin ⑬ of IC401 at 5 volts?
NO
Check ON/OFF 5V
YES
Is REC(H) supplied to pin ⑪ of IC401 at 5 volts?
NO
Check REC(H)
YES
Is TRICK(H) supplied to pin ① of IC401 at zero volts?
NO
Check TRICK(H)
YES
Is the signal from pin ⑨ and pin ⑩ fed to pin ㉒ (SP mode) and pin ⑰ (LP mode) of IC401?
NO
Check IC401
YES
Change drum

* IC401 : LA70011

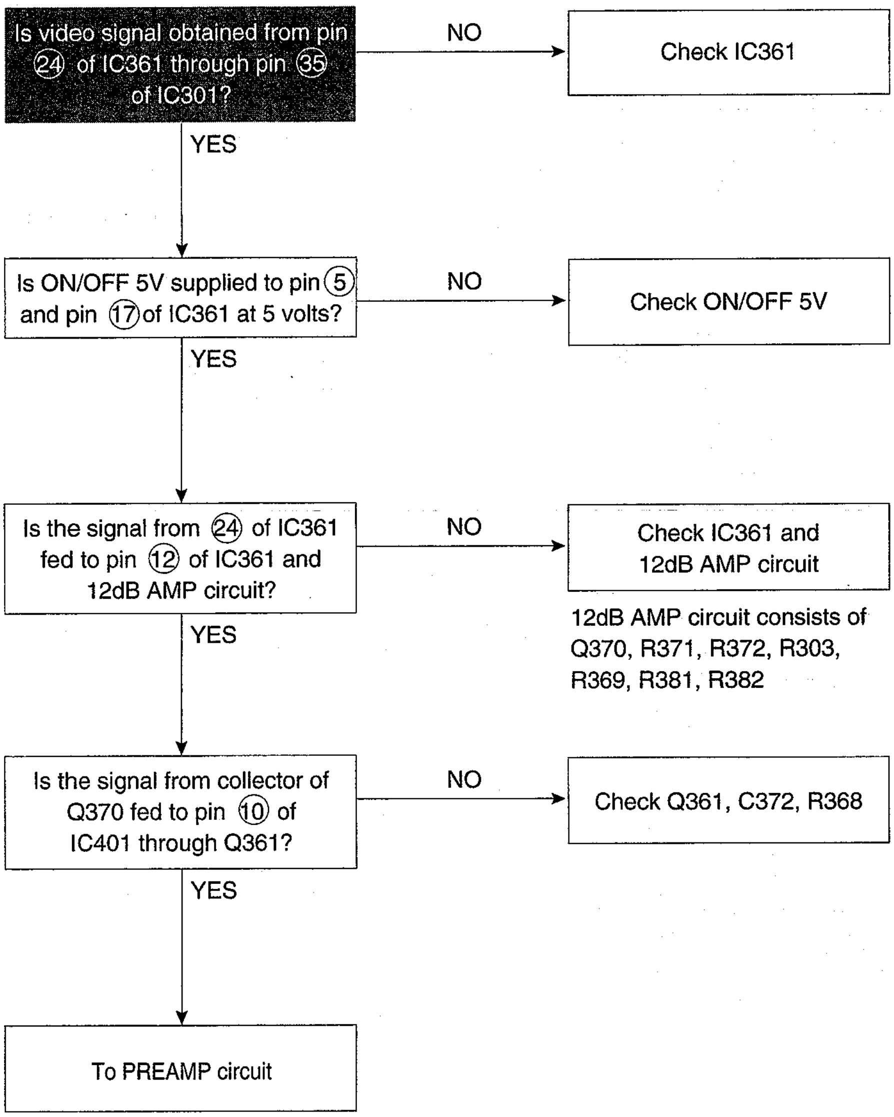
D. TROUBLESHOOTING OF LUMINANCE SIGNAL IN THE RECORD MODE.


Is the video signal obtained from pin ㉔ of IC601 (AV SW circuit)?
NO
Check AV SW circuit
YES
Is the video signal from pin ㉔ of IC601fed to pin ㉟ of IC301?
NO
Check PCB pattern and adjacent circuits.
YES
Is ON/OFF 5V supplied to pin ㊱ and pin ㊼ of IC301 at 5 volts?
NO
Check ON/OFF 5V
YES
Is EE SECAM(L) supplied to base of Q367 at 0 volt?
NO
Check EE SECAM(L)
* Only SECAM mode.
YES
Is the video signal from pin ㉟ of IC301 fed to pin ㉕ of IC301?
NO
Is Q302, Q368, Q369 and R308, R309, C312 correct?
YES
Check IC301
NO
Change damaged components
YES
Is the luminance signal from pin ㉕ of IC301 fed to pin ㉖of IC301?
NO
Check Q367, Q368 C315 and R371
YES
Is the luminance signal from pin ㉖ of IC301 fed to pin⑱ of IC301?
NO
Is TRICK(H) supplied to anode of D303 at zero volt?
YES
Check IC301
NO
Check TRICK(H)
YES
Is the modulating luminance signal from pin ⑱ of IC301 fed to pin ⑨ of IC401?
NO
Check R304, C403
YES
To PREAMP circuit

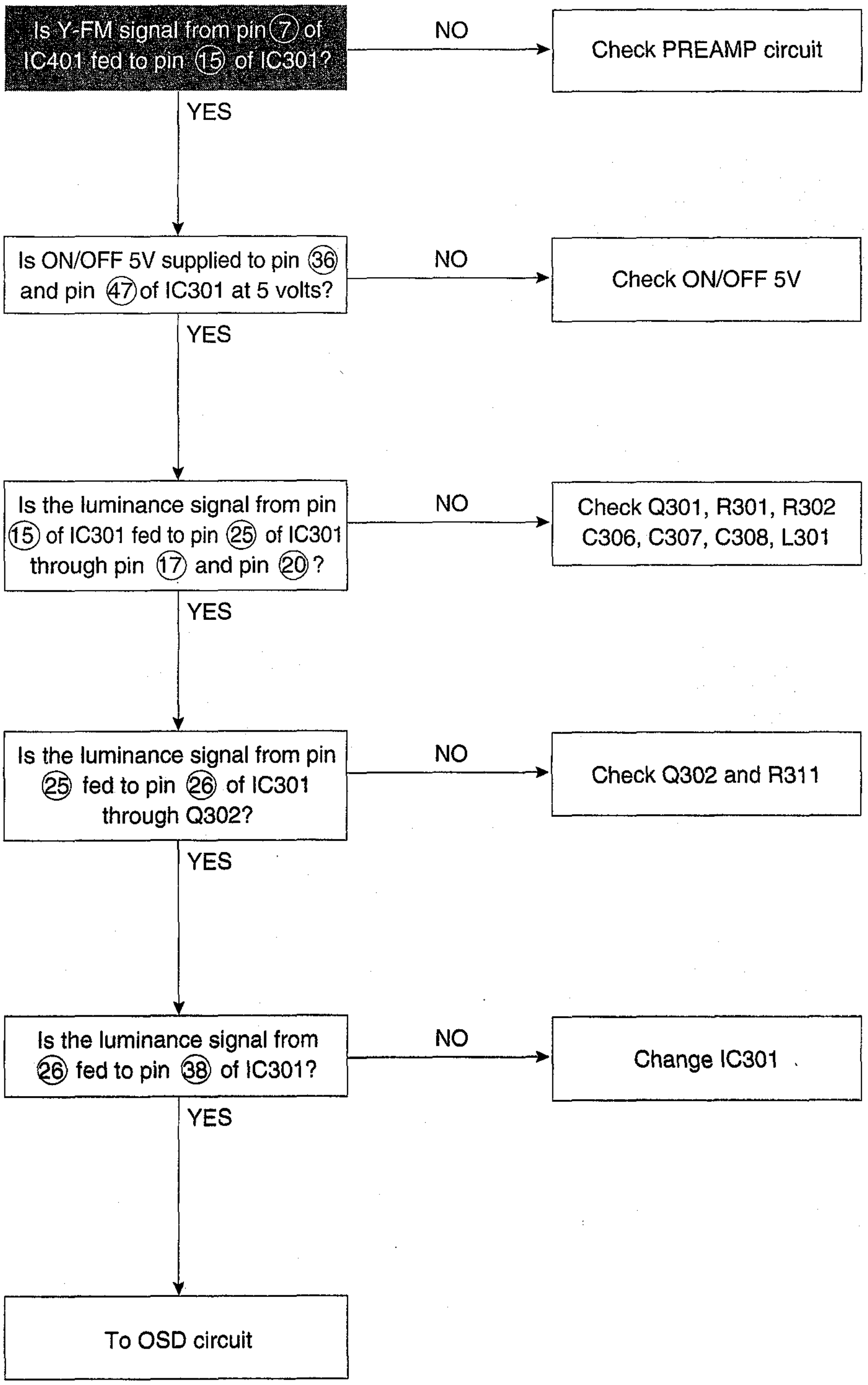
E. TROUBLESHOOTING OF PAL COLOUR IN THE RECORD MODE.


Is the video signal obtained from pin ㉔ of IC601 (A/V SW circuit)?
NO
Check AV SW circuit
YES
Is the video signal from pin ㉔ of IC601 fed to pin ㉟ of IC301?
NO
Check PCB pattern and adjacent circuit.
YES
Is ON/OFF 5V supplied to pin ㊱ and pin ㊼ of IC301 at 5 volts?
NO
Check ON/OFF 5V
YES
Is the down-converted colour signal obtained from pin ⑭ of IC301?
NO
Check IC301
YES
Is the down-converted colour signal from pin ⑭ of IC301 fed to pin ⑦ of IC401 through buffer(Q401)?
NO
Check Q401, R407, R408, R409, R410, R411, C413
YES
To PREAMP circuit

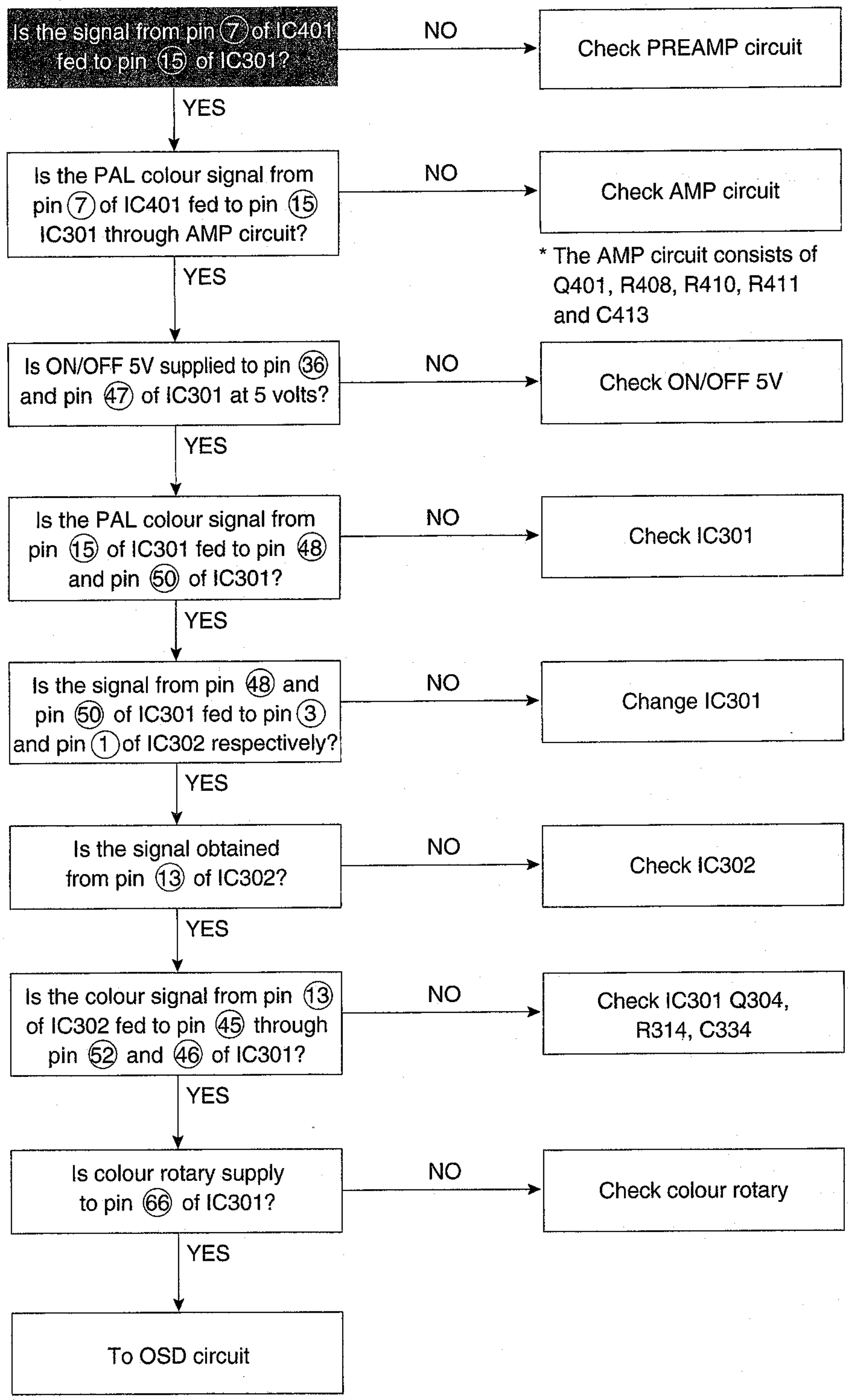
F. TROUBLESHOOTING OF SECAM COLOUR IN THE RECORD MODE.


Is video signal obtained from pin ㉔ of IC361 through pin ㉟ of IC301?
NO
Check IC361
YES
Is ON/OFF 5V supplied to pin ⑤ and pin ⑰ of IC361 at 5 volts?
NO
Check ON/OFF 5V
YES
Is the signal from ㉔ of IC361 fed to pin ⑫ of IC361 and 12dB AMP circuit?
NO
Check IC361 and 12dB AMP circuit
12dB AMP circuit consists of Q370, R371, R372, R303, R369, R381, R382
YES
Is the signal from collector of Q370 fed to pin ⑩ of IC401 through Q361?
NO
Check Q361, C372, R368
YES
To PREAMP circuit

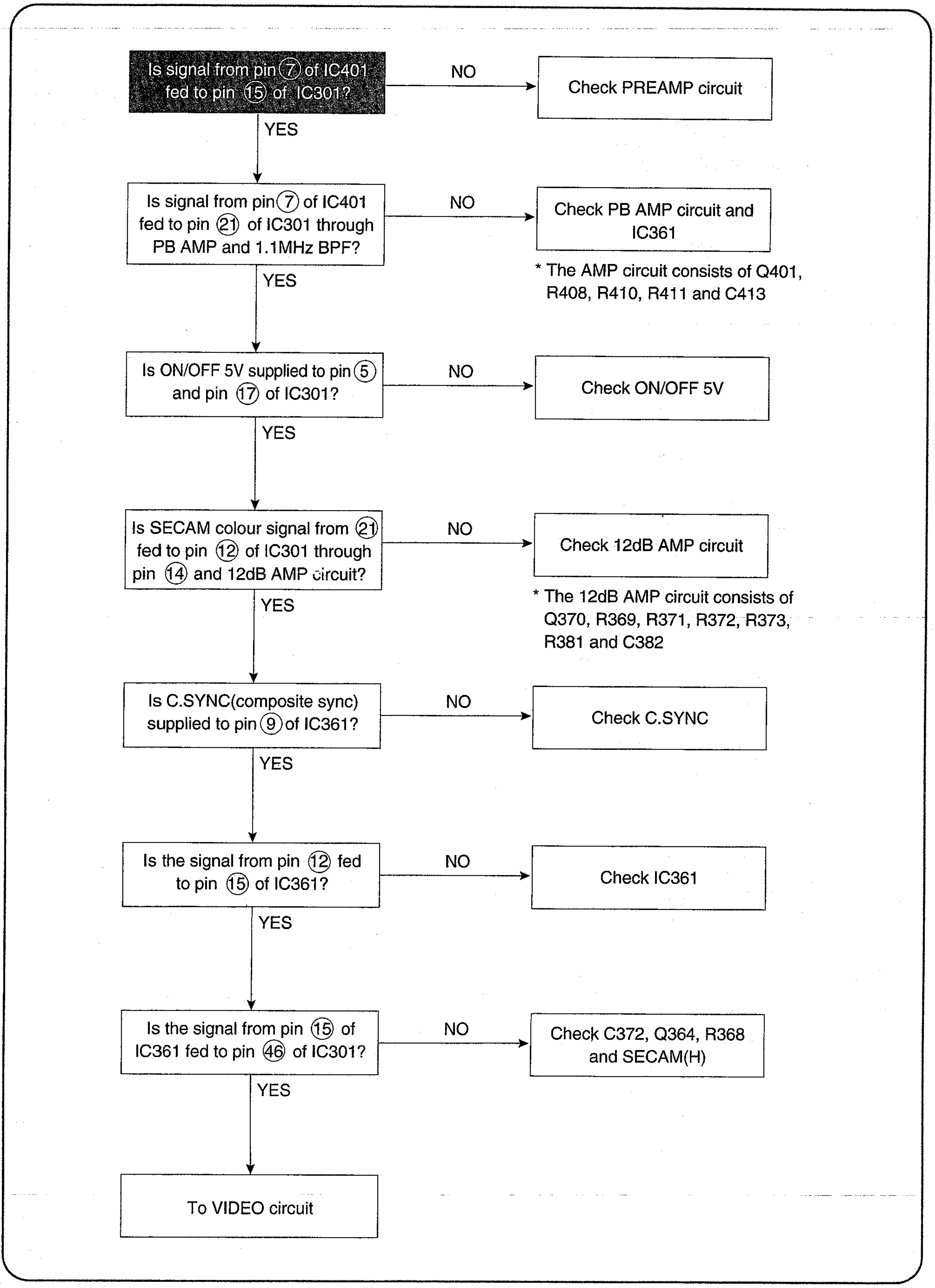
G. TROUBLESHOOTING OF LUMINANCE IN THE PLAYBACK MODE.


Is Y-FM signal from pin ⑦ of IC401 fed to pin ⑮ of IC301?
NO
Check PREAMP circuit
YES
Is ON/OFF 5V supplied to pin ㊱ and pin ㊼ of IC301 at 5 volts?
NO
Check ON/OFF 5V
YES
Is the luminance signal from pin ⑮ of IC301 fed to pin ㉕ of IC301 through pin ⑰ and pin ⑳?
NO
Check Q301, R301, R302 C306, C307, C308, L301
YES
Is the luminance signal from pin ㉕ fed to pin ㉖ of IC301 through Q302?
NO
Check Q302 and R311
YES
Is the luminance signal from ㉖ fed to pin ㊳ of IC301?
NO
Change IC301
YES
To OSD circuit

H. TROUBLESHOOTING OF PAL COLOUR IN THE PLAYBACK MODE.


Is the signal from pin ⑦ of IC401 fed to pin ⑮ of IC301?
NO
Check PREAMP circuit
YES
Is the PAL colour signal from pin ⑦ of IC401 fed to pin ⑮ IC301 through AMP circuit?
NO
Check AMP circuit
* The AMP circuit consists of Q401, R408, R410, R411 and C413
YES
Is ON/OFF 5V supplied to pin ㊱ and pin ㊼ of IC301 at 5 volts?
NO
Check ON/OFF 5V
YES
Is the PAL colour signal from pin ⑮ of IC301 fed to pin ㊽ and pin ㊿ of IC301?
NO
Check IC301
YES
Is the signal from pin ㊽ and pin ㊿ of IC301 fed to pin ③ and pin ① of IC302 respectively?
NO
Change IC301
YES
Is the signal obtained from pin ⑬ of IC302?
NO
Check IC302
YES
Is the colour signal from pin ⑬ of IC302 fed to pin ㊺ through pin (52) and ㊻ of IC301?
NO
Check IC301 Q304, R314, C334
YES
Is colour rotary supply to pin (66) of IC301?
NO
Check colour rotary
YES
To OSD circuit

I. TROUBLESHOOTING OF SECAM COLOUR IN THE PLAYBACK MODE.

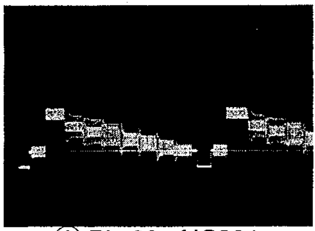

Is signal from pin ⑦ of IC401 fed to pin ⑮ of IC301?
NO
Check PREAMP circuit
YES
Is signal from pin ⑦ of IC401 fed to pin ㉑ of IC301 through PB AMP and 1.1MHz BPF?
NO
Check PB AMP circuit and IC361
YES
Is ON/OFF 5V supplied to pin ⑤ and pin ⑰ of IC301?
NO
Check ON/OFF 5V
YES
Is SECAM colour signal from ㉑ fed to pin ⑫ of IC301 through pin ⑭ and 12dB AMP circuit?
NO
Check 12dB AMP circuit
YES
Is C.SYNC(composite sync) supplied to pin ⑨ of IC361?
NO
Check C.SYNC
YES
Is the signal from pin ⑫ fed to pin ⑮ of IC361?
NO
Check IC361
YES
Is the signal from pin ⑮ of IC361 fed to pin ㊻ of IC301?
NO
Check C372, Q364, R368 and SECAM(H)
YES
To VIDEO circuit

* The AMP circuit consists of Q401, R408, R410, R411 and C413

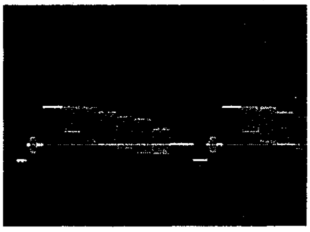
* The 12dB AMP circuit consists of Q370, R369, R371, R372, R373, R381 and C382

SECTION 5. WAVEFORMS ON VIDEO CIRCUIT

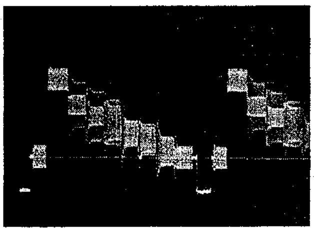
5-1. WAVEFORMS IN THE EE MODE (COLOR BAR INPUT)



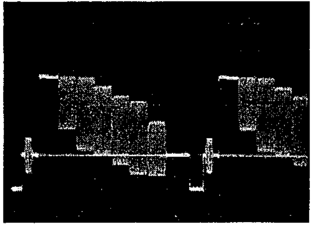
① Pin 30 of IC301
(SECAM color bar input :
1.0Vp-p)



② Pin 30 of IC301
(PAL color bar input :
1.0Vp-p)

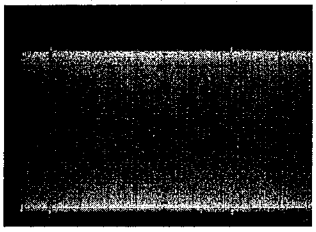


③ Pin 38 of IC301
(SECAM color bar output :
2.0Vp-p)

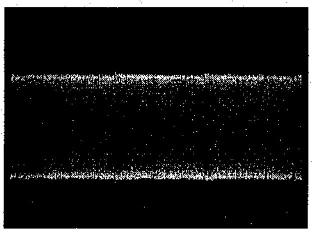


④ Pin 38 of IC301
(PAL color bar output :
2.0Vp-p)

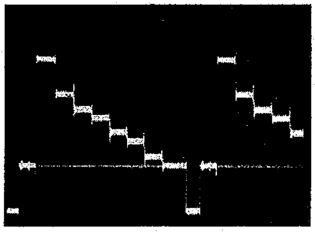
5-2. WAVEFORMS OF THE LUMINANCE IN THE RECORD MODE (COLOR BAR INPUT)



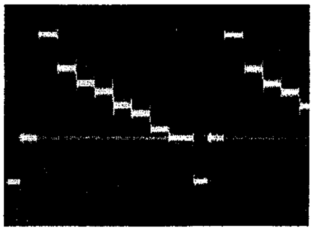
⑤ Pin 18 of IC301(PAL)
(REC luminance :
300mVp-p)



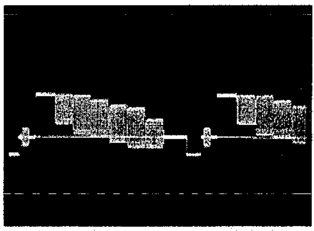
⑥ Pin 18 of IC301(SECAM)
(REC luminance :
300mVp-p)



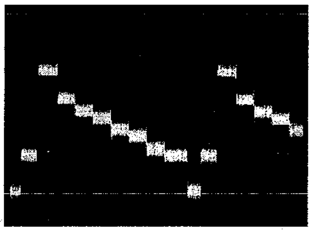
⑦ Pin 25 of IC301
(0.5Vp-p)



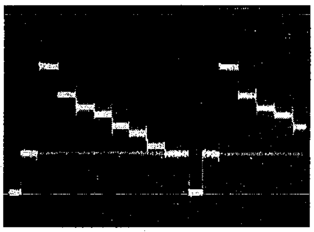
⑧ Pin 26 of IC301
(0.5Vp-p)



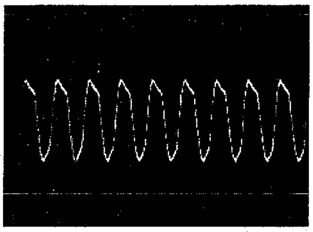
⑨ Pin 35 of IC301
(Color bar input :
1.0Vp-p)



⑩ Pin 40 of IC301
(0.4Vp-p)

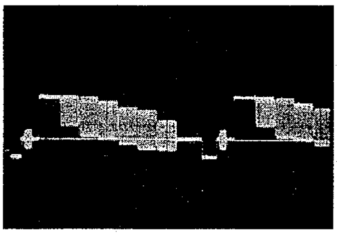


⑪ Pin 42 of IC301
(0.4Vp-p)

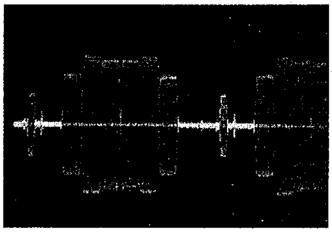


⑫ Pin 10 of IC302
(fsc=4.433619MHz :
350mVp-p)

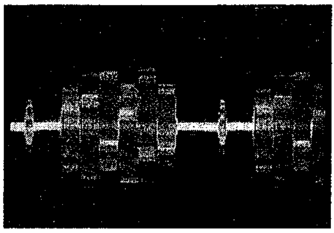
5-3. WAVEFORMS OF THE PAL COLOR IN THE RECORD MODE (COLOR BAR INPUT)



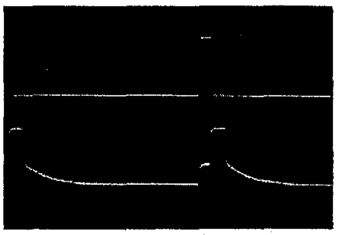
⑬ Pin 35 of IC301
(PAL color input :
1.0Vp-p)

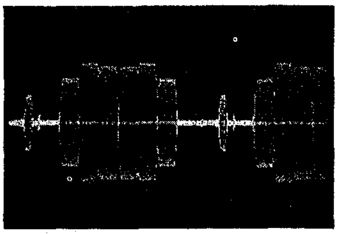


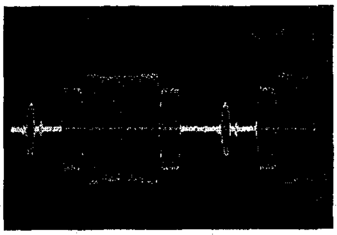
⑭ Pin 48 and 50 of IC301
(300mVp-p)



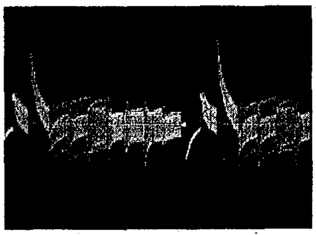
⑮ Pin 52 of IC301
(400mVp-p)

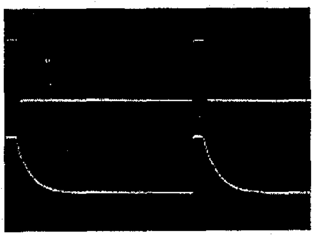

⑯ Pin 37 of IC301
(C.SYNC : 2Vp-p)

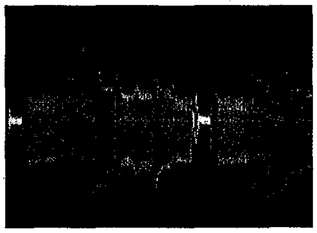

⑰ Pin 14 of IC301
(300mVp-p)

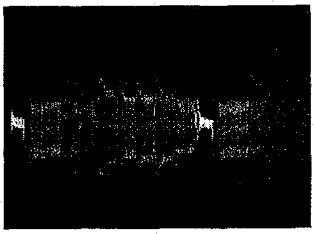

⑱ Pin 10 of IC401
(REC PAL color :
300mVp-p)

5-4. WAVEFORMS OF THE SECAM COLOR IN THE RECORD MODE (COLOR BAR INPUT)

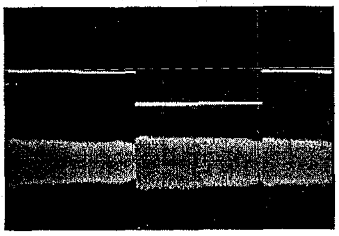

⑳ Pin 24 of IC361
(SECAM color input :
1.0Vp-p)

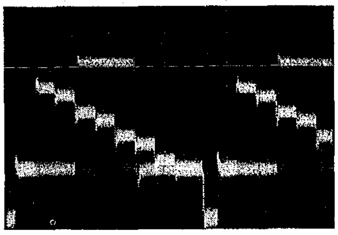

㉑ Pin 37 of IC301
(C. SYNC : 2.0Vp-p)

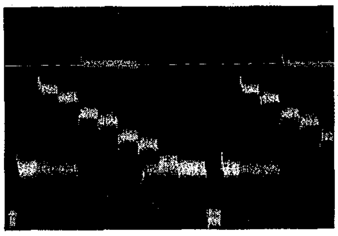

㉒ Pin 12 of IC361
(200mVp-p)

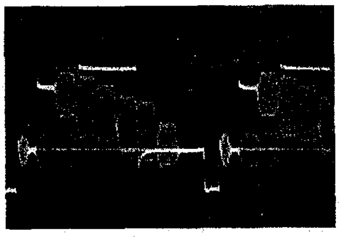

㉓ Pin 10 of IC401
(REC SECAM color :
400mVp-p)

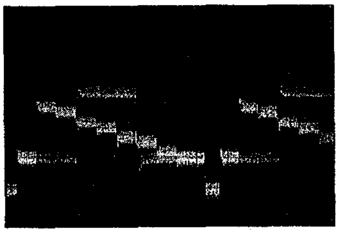
5-5. WAVEFORMS OF THE LUMINANCE IN THE PB MODE (DP-1 TEST TAPE)

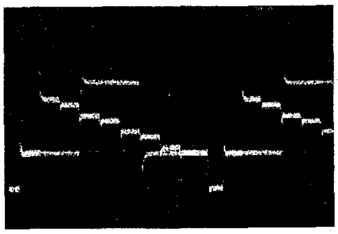

㉔ UP : Pin 66 of IC301
(color rotary : 1Vp-p)
DOWN : Pin 20 of IC301
(ENVE : 0.5Vp-p)


㉕ Pin 25 of IC301
(0.5Vp-p)

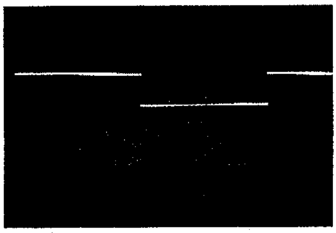

㉖ Pin 26 of IC301
(0.5Vp-p)


㉗ Pin 38 of IC301
(Video out : 2.0Vp-p)

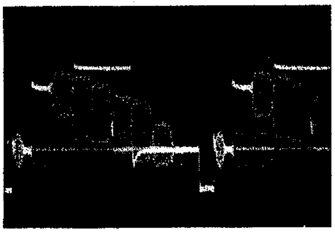

㉘ Pin 40 of IC301
(400mVp-p)


㉙ Pin 42 of IC301
(300mVp-p)

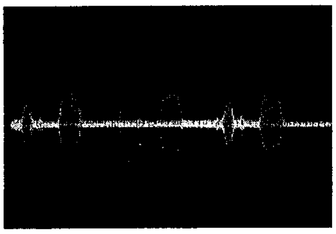
5-6. WAVEFORMS OF THE PAL COLOR IN THE PB MODE (DP-1 TEST TAPE)



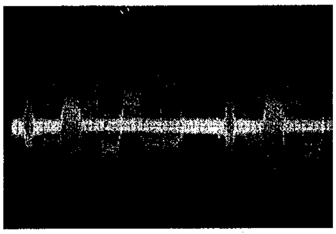
㉚ UP : Pin 66 of IC301
(color rotary : 0.5Vp-p)
DOWN : Pin 20 of IC301
(500mVp-p)



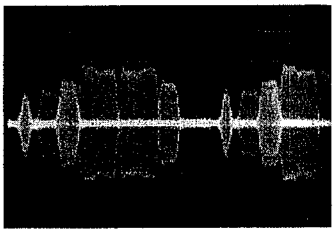
㉛ Pin 37 of IC301
(Video out : 2.0Vp-p)



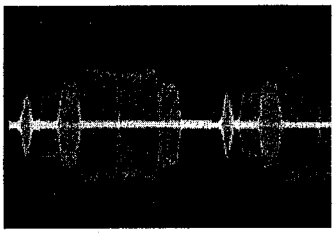
㉜ Pin 48 and 50 of IC301
(240mVp-p)



㉝ Pin 52 of IC301
(300mVp-p)

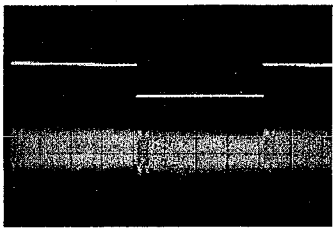


㉞ Pin 45 of IC301
(500mVp-p)

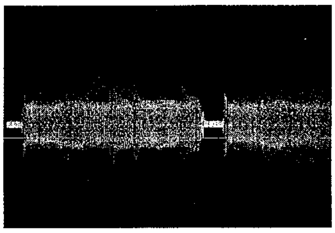


㉟ Pin 46 of IC301
(500mVp-p)

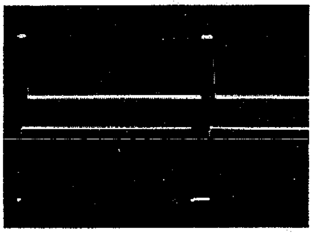
5-7. WAVEFORMS OF THE SECAM COLOR IN THE PB MODE (DS-1 TEST TAPE)



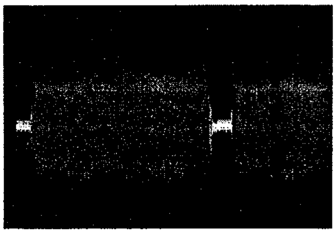
㊱ UP : Pin 66 of IC301
(color rotary : 0.5Vp-p)
DOWN : Pin 10 of IC401
(PB color ENVE :
400mVp-p)



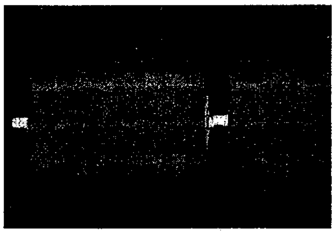
㊲ Pin 15 of IC361
(400mVp-p)



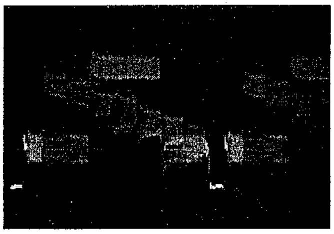
㊳ UP : Pin 37 of IC301
(C. SYNC : 2Vp-p)



㊴ Pin 21 of IC361
(PB SECAM color in :
400mVp-p)



㊵ Pin 45 of IC301
(280mVp-p)



㊶ Pin 38 of IC301
(SECAM video out :
2.0Vp-p)

SECTION 6. μ-COM PORT

IC 501 (PAL : 168KK4X1TS, SECAM : 168KK4X2TS)

* P : Pulse H : High L : Low

No.	NAME	PORT	I/O	ASSIGNMENT	ACTIVE	CN
1	IF ON (H)	P80/PBCTLmon	O	RF MODE 'H' OUTPUT OTHERWISE 'L' OUTPUT	H	PIF
2	AUDIO MUTE(H)	P77	O	AUDIO MUTE H OUTPUT	H	VIDEO
3	D. PWM	P76/PWM1	O	DRUM MOTOR CONTROL PWM OUTPUT	P	DECK(DRUM)
4	C. PWM	P75/PWM0	O	CAPSTAN MOTOR CONTROL PWM OUTPUT	P	DECK(CAP)
5	T REEL	P74/INT1	I	TAKE-UP REEL PULSE INPUT	P	DECK(REEL)
6	S REEL	P73/INT0	I	SUPPLY REEL PULSE INPUT	P	DECK(REEL)
7	MESECAM(H)	P72/TB3IN	I	MESCECAM MODE INPUT	H	VIDEO
8	V/SC DATA	P70/TB0IN	O	VIDEO SECAM SERIAL DATA OUTPUT (I^2C BUS)	SERIAL	VIDEO
9	V/SC CLK	P71/TB1IN	O	VIDEO SECAM SERIAL CLK OUTPUT (I^2C BUS)	SERIAL	VIDEO
10	EE SECAM(L)	P67/RTP15/P-HSYNCMON/VSYNCMON	O	EE SECAM MODE OUTPUT (SECAM)	L	VIDEO (SECAM)
11	REMOCON IN	P66/ RTP14/GEN	I	REMOCON DATA INPUT	P	REMOCON RECEIVER
12	SECAM(H)	P65/RPT13	I	SECAM MODE INPUT (SECAM)	H	VIDEO (SECAM)
13	TV/$\overline{\text{VCR}}$	P64/RPT13	I	SECAM MODE INPUT (SECAM)	H	VIDEO (SECAM)
14	Q V SYNC	P63/RTP11	O	PINOUT THIS SIGNAL DURING 'TRICK' MODES	PULSE/L	VIDEO
15	C. ROTARY	P62/RTP10 (EXOROUT1)	O	2HD : $\overline{\text{SW PULSE}}$ 4HD : EXCLUSIVE OR OUTPUT OF HEAD AMP SW & V. SW PULSE	P	VODEO
16	HEAD AMP SW	P61/RTP9 (EXOROUT0)	O	TO SELECT SP H'D OR LP H'D SP H'D : L LP H'D : H • 2H'D : L • 4HD — PLAY / CUE/REV SP : L / L/H LP : H / L/H	P	VIDEO
17	ENVE COMP	P60/RTP8 (EXORIN)	I	COMPARE SP ENVE WITH SP ENVE SP L LP : H	P	VIDEO
18	V. SW	R57/RTP7	O	TO SELECT R/L CHANNEL (VIDEO H'D)	P	VIDEO
19	NC	P56/RTP6				
20	SLOW STEP CONTROL	P55/RTP5	O	CONTROL SIGNAL TO PROTECT AGAINST ABNORMAL ACTION DURING SLOW MODE	P	CTL AMP
21	REC CTL	P54/ RTP4/TB2IN	O	CTL PULSE OUT IN REC MODE	P	DECK(CTL)
22	CAP FG	P53/ RTP3/CPFGIN	I	CAPSTAN FG INPUT	P	DECK(CAP)
23	DRUM PG	P52/ RTP2/DRPGIN	I	DRUM PG INPUT	P	DECK(DRUM)
24	DRUM FG	P51/ RTP1/DRFGIN	I	DRUM FG INPUT	P	DECK(DRUM)
25	PB CTL	P50/ RTP0/CTLIN	I	CTL PULSE INPUT	P	CTL AMP
26	VCC	VCC		BACK UP 5V		

<table>
<tr><th>No.</th><th>NAME</th><th>PORT</th><th>I/O</th><th>ASSIGNMENT</th><th>ACTIVE</th><th>CN</th></tr>
<tr><td>27</td><td>TV CONTROL</td><td>P47</td><td>O</td><td>TV/VCR MODE SWITCHING ON TV
TV MODE : L, VCR MODE : H
ACTIVE IN DIGITRON</td><td>L</td><td>A/V SW</td></tr>
<tr><td>28</td><td>CANAL + (L)</td><td>P46</td><td>I</td><td>LOW INPUT IN CANAL BROADCAST</td><td>L</td><td>A/V SW</td></tr>
<tr><td>29</td><td>NC</td><td>P45</td><td></td><td></td><td></td><td></td></tr>
<tr><td>30
31</td><td>L/M R
L/M F</td><td>P44
P43</td><td>O
O</td><td>
<table>
<tr><th></th><th>LM F</th><th>LM R</th><th>OUTPUT</th></tr>
<tr><td rowspan="2">LOADING MOTOR
REVERSE DRIVING</td><td>H</td><td>L</td><td>FORWARD</td></tr>
<tr><td>L</td><td>H</td><td>REVERSE</td></tr>
<tr><td rowspan="2">LOADING MOTOR
FORWARD DRIVING</td><td>H</td><td>H</td><td rowspan="2">BRAKE</td></tr>
<tr><td>L</td><td>L</td></tr>
</table>
</td><td>L/H</td><td>L/M IC</td></tr>
<tr><td>32
33
34
44</td><td>P42/ØOUT
P41
P41
P32</td><td>I
I
I
I</td><td></td><td>CAM DATA INPUT
* MODE SWITCHING TABLE
<table>
<tr><th>CAM A</th><th>CAM B</th><th>CAM C</th><th>CAM D</th><th>MODE</th></tr>
<tr><td>L</td><td>H</td><td>H</td><td>H</td><td>EJECT</td></tr>
<tr><td>L</td><td>H</td><td>L</td><td>H</td><td>STAND BY</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>H</td><td>REV</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>L</td><td>STOP</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>L</td><td>PLAY</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>L</td><td>SLOW</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>H</td><td>BRAKE</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>L</td><td>FF/REW</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>H</td><td>CAM OFF</td></tr>
</table>
</td><td>L</td><td>DECK(CAM)</td></tr>
<tr><td>35</td><td>NUB</td><td>NUB</td><td></td><td>GND</td><td></td><td></td></tr>
<tr><td>36</td><td>NUA</td><td>NUA</td><td></td><td>GND</td><td></td><td></td></tr>
<tr><td>37</td><td>RESET(L)</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>RESET INPUT</td><td>L</td><td></td></tr>
<tr><td>38</td><td>X_{IN}</td><td>X_{IN}</td><td>I</td><td>16MHz OSC IN</td><td></td><td></td></tr>
<tr><td>39</td><td>X_{OUT}</td><td>X_{OUT}</td><td>O</td><td>16MHz OSC OUT</td><td></td><td></td></tr>
<tr><td>40</td><td>CLK SEL</td><td>CLKSEL</td><td>I</td><td>AFTER RESET, A SYSTEM CLOCK IS SELECTED
DEPENDING UPON CURRENT STATE :
IF L : 32.768KHz
H : 16MHz IS SELECTED</td><td>L/H</td><td></td></tr>
<tr><td>41</td><td>V_{SS}</td><td>V_{SS}</td><td></td><td>GND</td><td></td><td></td></tr>
<tr><td>42</td><td>X_{CIN}</td><td>P141/X_{CIN} *</td><td>I</td><td>32.768KHz OSC IN</td><td></td><td></td></tr>
<tr><td>43</td><td>X_{COUT}</td><td>P140/X_{COUT} *</td><td>O</td><td>32.768KHz OSC OUT</td><td></td><td></td></tr>
<tr><td>44</td><td>CAM D</td><td>P32</td><td>I</td><td>SEE THE PRECEDING PAGE</td><td>L</td><td>DECK(CAM)</td></tr>
<tr><td>45</td><td>NC</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>46</td><td>CAP I LIMIT</td><td>P30</td><td>O</td><td>THIS PORT IS USUALLY OPEN BUT OUTPUTS THE CAPSTAN STOP STATE OF FRAME ADVANCE</td><td>L</td><td>DECK (CAPSTAN)</td></tr>
<tr><td>47</td><td>CAP F(L) / R(H)</td><td>P21</td><td>O</td><td>CAPSTAN MOTOR FORWARD(L) / REVERSE(H)</td><td>L/H</td><td>DECK (CAPSTAN)</td></tr>
<tr><td>48</td><td>POWER ON (L)</td><td>P20</td><td>O</td><td>POWER ON/OFF CONTROL PORT</td><td>L/H</td><td>POWER</td></tr>
</table>

No.	NAME	PORT	I/O	ASSIGNMENT	ACTIVE	CN
49	KET IN1	P17	I	KEY & OPTION DATA INPUT	P	
50	KEY IN2	P16	I	KEY & OPTION DATA INPUT	P	
51	S0	P15	O	SEGMENT 0		
52	S1	P14	O	SEGMENT 1		
53	S2	P13	O	SEGMENT 2		
54	S3	P12	O	SEGMENT 3		
55	S4	P11	O	SEGMENT 4		
56	S5	P10	O	SEGMENT 5		
57	S6	P07	O	SEGMENT 6		
58	S7	P06	O	SEGMENT 7		
59	S8	P05	O	SEGMENT 8		
60	S9	P04	O	SEGMENT 9		
61	S10	P03	0	SEGMENT 10		
62	S10	P03	0	SEGMENT 10		
63	S10	P03	0	SEGMENT 10		
64	S10	P03	0	SEGMENT 10		
65	S10	P03	0	SEGMENT 10		
66	S10	P03	0	SEGMENT 10		
67	G0	P127	O	GRID 0		
68	G0	P127	O	GRID 0		
69	G0	P127	O	GRID 0		
70	G0	P127	O	GRID 0		
71	G0	P127	O	GRID 0		
72	G0	P127	O	GRID 0		
73	G0	P127				
74	OSC CONTROL	P31	O	AUDIO OSC CONTROL PWR ON:H PWR OFF:L		
75	Vee	Vee		-24V		
76	Vcc	Vcc		BACK UP 5V		
77	OSD DATA	P113/TXD0	O	OSD, SERIAL DATA OUT	SERIAL	OSD
78	OSD STB	P112/RXD0	O	OSD CHIP SELECT OUTPUT	H	OSD
79	OSD CLK	P111/CLK0	O	OSD, SERIAL CLK OUT	SERIAL	OSD
80	NC	P110/CTS0/RTS0				
81	Vcc	Vcc		BACK UP 5V		
82	Vref	Vref		A/D REFERENCE 5V		
83	VS PWM	P101/PWM2	O	PWM OUT FOR CHANNEL SELET DURING RF MODE	P	PIF
84	REC SAFETY	P100/INT2 *	I	REC SAFETY TAB IS DETECTED L STATE SO THAT RECORDING IS INHIBITED	L	REC SAFETY SW

<table>
<tr><th>No.</th><th>NAME</th><th>PORT</th><th>I/O</th><th>ASSIGNMENT</th><th>ACTIVE</th><th>CN</th></tr>
<tr><td>85</td><td>POWER FAIL (L)</td><td>P97/AN7/$\overline{\text{ADTRG}}$</td><td>I</td><td>WHEN POWER IS DISCONNECTED THIS PORT DETECTS POWER FAILURE AND THEN GOES INTO POWER COMPENSATION MODE</td><td>L</td><td></td></tr>
<tr><td>86</td><td>START SENSOR</td><td>P96/AN6</td><td>I</td><td>TAPE START SENSOR DATA INPUT</td><td>A/D</td><td>START SENSOR</td></tr>
<tr><td>87</td><td>DRUM SEL</td><td>P95/AN5</td><td>I</td><td><table>
<tr><th></th><th>SP</th><th>LP</th><th>A/D INPUT</th><th>R501</th></tr>
<tr><td>PAL 4H'D</td><td>45/50</td><td>30/30</td><td>2.5~3.125</td><td>13K</td></tr>
<tr><td>PAL 2H'D(SP)</td><td>57/75</td><td></td><td>1.875~2.5</td><td>7.5K</td></tr>
<tr><td>PAL 2H'D(S/LP)</td><td>40/40</td><td>40/40</td><td>1.25~1.875</td><td>4.7K</td></tr>
<tr><td>SECAM 4H'D</td><td>49/49</td><td>20/20</td><td>3.125~3.75</td><td>22K</td></tr>
<tr><td>SECAM 2H'D(SP)</td><td>40/40</td><td></td><td>1.25~1.875</td><td>4.7K</td></tr>
</table></td><td>A/D</td><td></td></tr>
<tr><td>88</td><td>AFT</td><td>P94/AN4</td><td>I</td><td>AFT ANALOG DATA INPUT FOR AUTO FINE TUNING</td><td>A/D</td><td>PIF</td></tr>
<tr><td>89</td><td>AGC</td><td>P93/AN3</td><td>I</td><td>AFT ANALOG DATA INPUT FOR AUTO CH. SETTING</td><td>AD</td><td>PIF</td></tr>
<tr><td>90</td><td>END SENSOR</td><td>P92/AN2</td><td>I</td><td>TAPE END SENSOR DATA INPUT</td><td>L</td><td>END SENSOR</td></tr>
<tr><td>91</td><td>PATH ADJUST</td><td>P91/AN1</td><td>I</td><td>USE FOR PATH ADJUST</td><td>A/D</td><td>PATH JIG</td></tr>
<tr><td>92</td><td>DC ENVE</td><td>P90/AN1</td><td>I</td><td>DC ENVE DATA INPUT</td><td>A/D</td><td>VIDEO</td></tr>
<tr><td>93</td><td>C. SYNC</td><td>CSYNCIN</td><td>I</td><td>COMPOSITE SYNC DATA INPUT</td><td>P</td><td>VIDEO</td></tr>
<tr><td>94</td><td>AV/PDC/MOD E^{2}PROM DATA</td><td>P87/Sout1</td><td>O</td><td>AV SW, PDC, MOD. SERIAL DATA OUT(I^{2}C BUS)</td><td>SREIAL</td><td>PDC
PIF</td></tr>
<tr><td>95</td><td>AV/PDC/MOD E^{2}PROM CLK</td><td>P86/Sin1</td><td>O</td><td>AV SW, PDC, MOD. SERIAL CLOCK OUT (I^{2}C BUS)</td><td>SERIAL</td><td>PDC
PIF</td></tr>
<tr><td>96</td><td>UHF (H)</td><td>P85/SCLK1</td><td>O</td><td>USE FOR BAND SELECT</td><td>H</td><td>PIF</td></tr>
<tr><td>97</td><td>VH (H)</td><td>P84/CPFGmon /$\overline{\text{SRDY1}}$</td><td>O</td><td>USE FOR VHF HIGH BAND SELECT</td><td>H</td><td>PIF</td></tr>
<tr><td>98</td><td>VL (H)</td><td>P83</td><td>O</td><td>USE FOR UHF LOW BAND SELECT</td><td>H</td><td>PIF</td></tr>
<tr><td>99</td><td>SCM L' (H)</td><td>P82/DRPGmon</td><td>O</td><td>USE FOR SECAM VHF LOW BAND SELECT</td><td>H</td><td>PIF(SECAM)</td></tr>
<tr><td>100</td><td>IF SEL (PAL 'H')</td><td>P81/DRFGmon</td><td>O</td><td>USE FOR SECAM/PAL SELECT IN IF MODULE</td><td>H/L</td><td>PIF(SECAM)</td></tr>
</table>

SECTION 7. VOLTAGE CHARTS

VOLTAGE CHARTS

1. TDA9814T for IF IC (IC101)

MODE PIN NO.	PAL	SECAM (L')	REMARKS
1	3.3	3.3	Conditions : EE MODE
2	3.3	3.3	
3	0.8	1.8	
4	0.7	0.7	
5	2.5	2.5	
6	2.9	2.8	
7	5.2	0	
8	2.5	2.3	
9	3.5	3.5 (0.7)	
10	2.5	2.5	
11	0	0	
12	0	0	
13	2.2	1.6	
14	0	0	

MODE PIN NO.	PAL	SECAM (L')	REMARKS
15	2.7	2.7 (1.8)	Conditions : EE MODE X : Variable
16	X	X	
17	2.1	2.1	
18	2.1	2.0	
19	2.0		
20	2.5	2.0'2.5	
21	2.7	2.7	
22	2.7	2.7	
23	2.4	2.4	
24	0	0	
25	3.1	3.1	
26	5.0	5.0	
27	3.2	3.2	
28	3.2	3.2	

LA71511M for VIDEO/AUDIO IC (DC:Voltage) (IC301)

PIN NO.	REC	PB	PIN NO.	REC	PB	PIN NO.	REC	PB	PIN NO.	REC	PB
1	2.44	2.40	21	0.35	0.39	41	0.06	0.06	61	2.05	2.02
2	0.01	0.00	22	1.56	2.25	42	2.00	1.97	62	0.21	0.26
3	2.44	2.41	23	0.02	1.80	43	0.48	0.47	63	4.48	4.48
4	1.03	0.05	24	2.41	1.82	44	1.83	1.84	64	4.75	4.75
5	1.35	5.51	25	2.15	2.08	45	1.96	1.95	65	0.31	0.31
6	0.86	0.02	26	3.08	3.03	46	0.03	2.70	66	0.00	0.40
7	2.42	2.39	27	0.00	0.06	47	5.09	5.07	67	0.04	0.04
8	2.46	2.40	28	1.80	0.28	48	2.85	2.84	68	0.06	0.61
9	2.37	2.37	29	1.90	2.16	49	4.42	4.24	69	5.09	5.08
10	2.37	2.37	30	2.11	0.00	50	2.92	2.91	70	0.02	0.00
11	3.07	2.38	31	4.08	4.08	51	4.23	4.25	71	2.39	2.38
12	2.32	2.31	32	1.80	0.28	52	3.22	3.20	72	0.01	0.01
13	1.71	2.08	33	0.58	0.58	53	0.00	0.04	73	2.39	2.38
14	2.95	0.31	34	2.17	0.00	54	2.15	2.09	74	2.41	2.40
15	0.00	3.25	35	3.14	3.16	55	5.15	5.13	75	2.39	2.38
16	2.56	2.59	36	5.09	5.06	56	5.15	5.13	76	5.15	5.14
17	3.32	1.64	37	0.59	0.59	57	0.01	0.00	77	2.49	2.48
18	2.11	1.56	38	1.70	1.78	58	0.19	3.54	78	0.00	0.00
19	4.30	0.08	39	3.19	3.18	59	2.46	2.09	79	2.40	2.38
20	3.14	3.05	40	3.01	3.00	60	4.07	4.03	80	5.14	0.15

TA1238N for SECAM.L IC
(IC361)

PIN NO.	REC	PB
1	2.48	2.49
2	2.72	2.40
3	2.97	2.96
4	4.10	4.12
5	5.05	5.06
6	4.68	4.69
7	4.75	4.74
8	0.00	0.00
9	0.56	0.56
10	0.00	0.00
11	3.27	3.27
12	1.84	1.89
13	3.44	3.45
14	0.00	0.00
15	1.90	1.90
16	3.24	3.24
17	5.03	5.04
18	2.55	2.65
19	1.74	1.73
20	0.00	0.00
21	2.63	2.63
22	2.61	2.63
23	3.45	1.86
24	2.57	2.57

LA70011 for PREAMP IC
(IC401)

PIN NO.	REC	PB
1	2.03	2.04
2	0.32	0.34
3	0.00	0.00
4	1.11	1.10
5	0.29	0.28
6	0.92	3.54
7	0.00	1.73
8	0.00	0.00
9	3.48	0.31
10	3.47	0.30
11	4.22	0.08
12	2.53	2.54
13	0.00	5.04
14	4.10	5.04
15	1.56	0.00
16	3.96	2.03
17	3.91	2.03
18	2.52	0.01
19	3.95	2.03
20	0.00	0.00
21	1.10	0.73
22	1.10	0.73
23	2.54	0.01
24	1.10	0.73

12BKK8W5ML for OSD IC DC(AC) : Volt
(IC001)

PIN NO.	REC	PB	PIN NO.	REC	PB
1	0.00	0.00	16	1.99	2.47
2	2.62	2.62	17	5.00	5.01
3	2.63	2.64	18	2.00	2.43
4	0.00	0.00	19	2.03	2.39
5	0.00	0.00	20	3.00	3.15
6	0.00	0.00	21	2.00	2.00
7	0.00	0.00	22	0.00	0.00
8	(2.2)	(2.2)	23	2.75	2.75
9	(2.0)	(2.0)	24	2.76	2.76
10	(2.2)	(2.2)	25	2.83	2.82
11	5.00	5.01	26	2.82	2.82
12	5.00	5.01	27	2.64	2.64
13	5.00	5.01	28	2.64	2.64
14	5.00	5.01	29	0.00	0.00
15	4.50	4.50	30	5.00	5.00

LC89977M for CCD IC
(IC302)

PIN NO.	REC	PB
1	2.60	2.60
2	5.04	5.05
3	2.59	2.59
4	0.00	0.01
5	2.54	2.53
6	0.00	0.00
7	1.75	1.73
8	9.18	9.18
9	2.17	2.18
10	0.83	0.83
11	0.04	0.04
12	0.42	0.42
13	1.97	1.97
14	0.00	0.01

ELECTRO CAPACITOR

LOC	POSITIVE	NEGATIVE	LOC	POSITIVE	NEGATIVE
C002	5.02	0.00	C322	3.11	2.21
C007	2.83	2.76	C324	5.03	0.00
C014	4.51	0.00	C325	1.94	0.00
C020	9.38	0.00	C326	3.05	2.16
C021	2.19	1.30	C327	1.78	0.01
C202	0.00	0.00	C330	5.03	0.01
C204	2.38	0.01	C331	4.17	0.01
C207	5.09	0.00	C333	4.18	0.01
C208	2.43	0.01	C337	2.15	0.01
C212	5.47	0.93	C339	5.06	0.01
C216	0.89	0.01	C343	2.37	1.85
C219	2.42	0.01	C366	5.07	0.00
C222	5.47	0.01	C369	3.27	0.00
C223	0.92	0.01	C373	5.05	0.00
C301	1.80	0.00	C375	2.52	0.00
C309	2.93	0.00	C378	2.59	0.00
C315	2.93	1.40	C383	0.75	0.00
C317	1.64	0.00	C407	5.05	0.00
C320	4.05	0.00	C408	1.53	0.00

BH7634AS for AV SW. IC (IC601)

PIN NO.	REC	PB	PIN NO.	REC	PB
1	1.6	1.6	13	4.4	4.4
2	0	0	14	4.9	4.9
3	2.0	2.0	15	4.8	4.8
4	9.5	9.5	16	4.1	4.1
5	1.6	1.6	17	4.8	4.8
6	0	0	18	4.1	4.1
7	4.1	4.1	19	9.5	9.5
8	0	0	20	1.7	1.7
9	4.1	4.1	21	1.4	1.4
10	0	0	22	1.4	1.4
11	4.1	4.1	23	2.6	2.6
12	0	0	24	26	2.6

BA6209 for M/T DRIVE IC (IC502)

PIN NO	REC	PB
1	0	0
2	0.5	0.5
3	0.84	0.84
4	6.1	6.1
5	0	0
6	0	0
7	12.3	12.5
8	12.3	12.5
9	0.86	0.86
10	0.5	0.5

24LC08B for EEPROM IC (IC503)

PIN NO	REC	PB
1	0	0
2	0	0
3	0	0
4	0	0
5	5.26	5.26
6	0	0
7	4.71	4.71
8	4.71	4.71

K1A7033P for RESET IC (IC504)

PIN NO	REC	PB
1	5.28	5.28
2	0	0
3	5.28	5.28

MC4558C for OPAMP IC (IC505)

PIN NO	REC	PB
1	2.92	3.4
2	3.07	3.2
3	3.17	3.2
4	0	0
5	5.9	6.0
6	3.04	3.0
7	3.07	3.2
8	3.07	3.2

IC051 (SDA5649)

MODE / PIN NO.	PAL	SECAM	REMARKS
1	0	0	Conditions : EE MODE
2	4.7	4.7	
3	4.7	4.7	
4	0	0	
5	0.4	0.4	
6	5.0	5.0	
7	2.5	2.5	
8	0	0	Conditions : EE MODE
9	2.7	2.7	
10	2.6	2.6	
11	2.7	2.7	
12	1.5	1.5	
13	1.5	1.5	
14	5.0	5.0	

MAIN PART TR

PORTS / LOC.	EMITTER		COLLECTOR		BASE	
	PB	REC	PB	REC	PB	REC
Q501	0	0	0	0	4.7	4.7
Q502	6	06	6	06	5.3	5.3
Q503	0	0	0	0	0.76	0.76
Q504	12.5	12.3	12.5	12.3	11.8	11.6
Q505	0	0	0	0	0.76	0.76

SECAM PART TR (SECAM MODE)

PORTS / LOC.	EMITTER		COLLECTOR		BASE	
	PB	REC	PB	REC	PB	REC
Q361	4.75	4.53	5.15	5.19	5.14	5.15
Q362	0	0	0.02	0.02	4.02	4.06
Q363	5.17	5.21	5.16	5.19	4.49	4.53
Q364	4.51	4.76	5.16	5.19	5.13	5.19
Q365	3.93	3.96	5.13	5.16	4.6	4.62
Q366	1.62	3.06	5.18	5.21	0.05	3.72
Q367	0	0	0.05	0	5.17	0.01
Q368	0.06	1.47	0.05	3.71	0.76	2.09
Q369	1.6	1.6	5.2	5.2	2.26	2.25
Q370	1.14	1.16	4.57	4.58	1.76	1.77

VIDEO PART TR (PAL MODE)

PORTS / LOC.	EMITTER		COLLECTOR		BASE	
	PB	REC	PB	REC	PB	REC
Q002	2.64	2.61	0	0	1.94	1.91
Q301	0.83	2.1	4.33	3.11	1.47	2.77
Q302	1.58	1.62	5.2	5.21	2.22	2.25
Q303	2.02	2.02	0.01	0	1.38	1.38
Q304	1.23	1.23	5.15	5.17	1.86	1.86
Q306	1.13	1.13	5.19	5.21	1.76	1.76
Q401	1.15	1.16	4.61	4.62	1.77	1.78

IF MODULE PART TR

PORTS / LOC.	EMITTER		COLLECTOR		BASE	
	PAL	SECAM (L')	PAL	SECAM (L')	PAL	SECAM (L')
Q101	0.6	0.6	4.7	4.7	1.3	1.3
Q102	0	0	3.9	3.9 (0)	0	0 (5.0)
Q103	0	0	0	0 (4.0)	3.9	3.9 (0)
Q104	0	0	0	0	5.0	0
Q105	0	0	3.5	3.5 (0)	0	0 (5.0)

AUDIO PART TR

PORTS / LOC.	EMITTER		COLLECTOR		BASE	
	PB	REC	PB	REC	PB	REC
Q201	5.4	1.82	5.9	5.46	5.9	2.41
Q202	5.19	5.2	5.16	-28.77	4.53	5.2
Q203	0	-23.44	0.01	0	0.68	-29.26
Q204	0	-23.44	0	0	0.7	-28.58
Q205	0	0.02	5.43	1.64	0.02	0.86

A/V SW PART TR

PORTS	EMITTER		COLLECTOR		BASE	
LOC.	PB (VCR MODE)	POWER OFF	PB	POWER OFF	PB	POWER OFF
Q601	0	0	5.2	5.28	0	0
Q602	0	0	0.04	12.13	5.08	0
Q603	12.3	12.13	12.3	0	0.04	12.13
Q604	1.97	1.814	9.36	9.33	2.64	2.48

PIF PART TR (EE MODE)

PORTS	EMITTER		COLLECTOR		BASE	
LOC.	PAL	SECAM	PAL	SECAM	PAL	SECAM
Q171	9.4	9.4	X	X	X	X
Q172	9.4	9.4	X	X	X	X
Q173	9.4	9.4	X	X	X	X
Q174	0	0	X	X	X	X
Q175	0	0	X	X	X	X
Q176	0	0	X	X	X	X
Q177	9.5	9.5	9.5	9.5	8.8	8.8
Q178	0	0	0	0	3.8	3.8
Q179	0	0	X	X	X	X
Q180	5.0	5.0	5.0	5.0	4.4	4.4
Q196	0	0	0	0	3.8	3.8
Q197	5.0	5.0	5.0	5.0	4.4	4.4

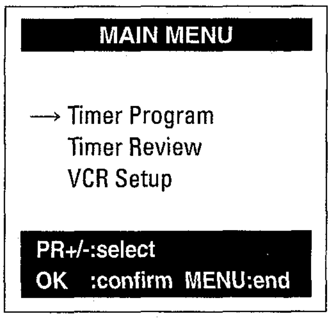
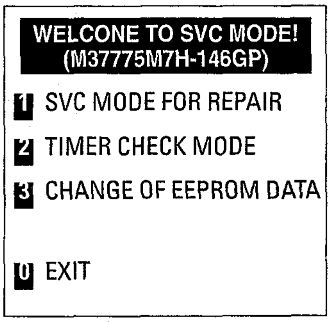
* X : Variable

POWER PART TR

PORTS	EMITTER		COLLECTOR		BASE	
LOC.	POWER ON	POWER OFF	POWER ON	POWER OFF	POWER ON	POWER OFF
Q811	9.30	9.30	12.5	12.17	9.93	9.93
Q812	5.43	13.05	5.92	5.99	5.94	0.07
Q813	0	0	5.93	0.07	0	0.80

SECTION 8. SERVICE MODE

8-1. SERVICE MODE

ITEM	OSD	REMARKS
①Press the [MENU] button to go to [MAIN MENU] screen and press the number 484 in sequence then go to [SERVICE MODE] screen. ②Display language is ENGLISH only. ③Maintain the selected mode continuosly. ④Composition of the SERVICE MODE is as follows. 1) SERVICE MODE FOR REPAIR 2) TIMER CHECK MODE 3) CHANGE OF EEPROM DATA ⑤Everlasting data memory at E^{2}PROM	①  MAIN MENU → Timer Program Timer Review VCR Setup PR+/-:select OK :confirm MENU:end  WELCONE TO SVC MODE! (M37775M7H-146GP) 1 SVC MODE FOR REPAIR 2 TIMER CHECK MODE 3 CHANGE OF EEPROM DATA 0 EXIT	

8-2. SVC MODE FOR REPAIR

1. ERROR CHECK MODE

ITEM	OSD	REMARKS
①Press the number 1 button, then OSD ① is displayed in the initial SVC mode screen.	① **SVC MODE FOR REPAIR** 1 DECK JIG CONNECTION MODE (OFF) 2 EE MODE WITHOUT DECK MODE (OFF) 3 ERROR CHECK MODE 0 RETURN * ERROR CHECK MODE	
②Press the number 3 button, then OSD ② is displayed in the SVC MODE FOR REPAIR screen. It can be selected in TAPE OUT state only.	② **ERROR CHECKING** CHECKING PLEASE WAIT . . . * "CHECKING" is blinks for 5 seconds.	
③PAL TEST TAPE is inserted after guide message is appeared, PLAY → CUE → STILL → SLOW → F.F → REW → PLAY → REV → STOP operations are executed automatically and OSD ④ will be displayed. To press 0 button on OSD ④ will be ejected.	③ **ERROR CHECK MODE** PLEASE INSERT A TEST TAPE FOR ERROR CHECK.	
④The error state is displayed 'OK' or 'NG' in ERROR CHECK RESULTS screen. * '--' means unchecked state.	④ **ERROR CHECK RESULTS** 1. DRUM : OK 2. CAPSTAN : OK 3. S-RELL : OK 4. T-REEL : OK 5. CAM : OK 6. CTL : NG 7. ENVELOPE : -- 0 RETURN	

2. DECK JIG CONNECTION MODE

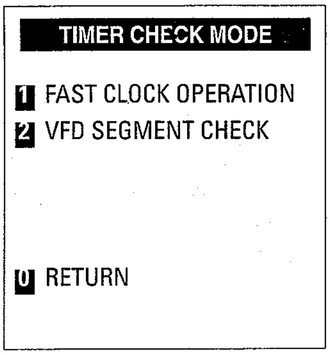
ITEM	OSD	REMARKS
①Press the number 1 button, OFF ↔ ON is toggled in the SVC MODE FOR REPAIR screen. * The initial state is set to OFF mode.		

3. EE MODE WITHOUT DECK

ITEM	OSD	REMARKS
①Press the number 2 button, OFF ↔ ON is toggled in the SVC MODE FOR REPAIR screen. * The initial state is set to OFF mode.		

8-3. TIMER CHECK MODE

1. FAST CLOCK OPERATION

ITEM	OSD	REMARKS
* TIMER CHECK MODE is used to check the TIMER RECORD/SHOWVIEW RECORD and VFD SEGNEMT. ①Press the number 2 button, then OSD ① will be displayed in the initial SVC mode screen. ②Press the number 1 button, FAST CLOCK OPERATION will be selected in the TIMER CHECK MODE screen. * The clock is operated with 60 times (1Min → 1 Sec.) ③Press the number 1 button, VFD SEGNEMT CHECK will be selected in the TIMER CHECK MODE screen. * All segments are lit on VFD for 5 seconds.	①  TIMER CHECK MODE 1 FAST CLOCK OPERATION 2 VFD SEGMENT CHECK 0 RETURN	

8-4. CHANGE OF EEPROM DATA

ITEM	OSD	REMARKS
* CHANGE OF EEPROM DATA MODE is used for change the VIDEO/AUDIO characteristic data. ①Press the number 3 button, OSD ① will be displayed in the initial SVC mode screen. ②Press the [←] button to move from right to left. ③Press the [→] button to move from upper to lower. ④Press the [OK] button to confirm the data change. ⑤The data is not changable related to the system. * System data changed by pressing the [PAL/SECAM] key.	00011101 A1 11111110 A2 10000010 A3 10100010 A4 11011011 A5 01001010 A6 00001000 A7 10011000 A8 10001000 A9 0 RETURN * ▨ parts are toggled like as 'A → P → M → A' by pressing the [PAL/SECAM] key.	A : AUTO P : PAL M : MESECAM S : SECAM * SECAM MODEL 'A→S→P→M→A'

8-5. CHANGE OF EEPROM DATA IN PB MODE

ITEM	OSD	REMARKS
①Press the number 3 button, OSD ① will be displayed in PB mode screen. * Press the [REC] button to adjust the PG (6.5H). ②Press the [←] button to move from right to left. ③Press the [→] button to move from upper to lower. ④Press the [OK] button to confirm the data change. ⑤The data is not changable related to the system.	① 00011101 A1 11111110 A2 10000010 A3 10100010 A4 11011011 A5 01001010 A6 00001000 A7 10011000 A8 10001000 A9 0 RETURN REC PG(6.5H)	

8-6. CHANGE OF EEPROM DATA IN SLOW MODE

ITEM	OSD	REMARKS
①Press the [SLOW] button, OSD ① will be displayed in PB mode screen. ②Press the [←/→] button to adjust the SLOW TRACKING. ③Adjustment step is [←] : 0~99 and [→] : 0~99	① 00011101 A1 11111110 A2 10000010 A3 10100010 A4 11011011 A5 01001010 A6 00001000 A7 10011000 A8 10001000 A9 0 RETURN ←/→ SLOW 00	

8-7. THE METHOD TO INITIALIZE THE EEPROM

1. When [484] is sequentially pressed in MENU mode, the SERVICE mode is activated.
2. Choose "CHANGE OF EEPROM DATA" by pressing [3].
3. The input video signal should be PAL or null signal, and the speed should be SP.
4. Change the 7th and the 8th bits of GROUP 1 to 11 by the [←], [→], [OK] buttons.
5. The data are stored in EEPROM when [0] button is pressed.
6. Pull out the mains power cord.
7. Instantly short the JP142 and JP143 jumpers on MAIN PCB to reset the VCR.
8. Plug in the mains power cord again.

8-8. THE METHOD TO CONTROL THE A/V 1CHIP (LA71511M) SERIAL DATA

1. Access to the SERVICE MODE by pressing [484] buttons sequentially in MAIN MENU.
2. Choose "CHANGE OF EEPROM DATA" by pressing [3].
3. Then the data table which indicates the current video system (PAL/SECAM) and speed (SP/LP) is displayed on screen, while it detects the system and speed automatically.
4. Select the system and speed using [PAL/SECAM] button and [SP/LP] button on remote control if you need to change.
5. The cursor on the data table moves from right to left when the [←] button is pressed.
6. The cursor on the data table moves from up to down when the [←] button is pressed.
7. Data is toggled whenever the [OK] button is pressed on the cursor position.
8. If you need to change the data related to TRICK PLAY, it can be easily accessed in STILL mode.
9. First, the mode of the system detection should be AUTO mode after you change the data, and then if [0] button is pressed after this, the data of the current status are stored in EEPROM, then the SERVICE MODE MENU is displayed.
10. The data corresponding to the system, speed, input selection, trick play are not changed.

* The group indication part on the data table is changed as in order of A1, A2, ... → P1, P2, ... → M1, M2, ... → S1, S2, ... (SECAM ONLY) → A1, A2, ... whenever the [PAL/SECAM] button on remote control is pressed, the system detection of which are A(AUTO), P(FORCED PAL), M(FORCED MESECAM), S(FROCED SECAM) respectively.

* The data changed to the current system according to the input video signal automatically in case of AUTO mode. and if no signal, it changes to PAL system.

* Adjust the correct system by prssing the [PAL/SECAM] button on remote control if the current status of the system is not correspont to the input vodeo signal.

8-9. SANYO A/V 1 CHIP SERIAL CONTROL TABLE

ADDRESS \ BIT	8	7	6	5	4	3	2	1
0000 0001 GROUP 1 COMMON	00 AUTO COLOR KILLER (NORMAL MODE) 10 FORCED KILLER 01 FORCED COLOR 11 PROHIBIT		00 Y DELAY REC +200nS/PB : +160nS 10 Y DELAY REC 0nS/PB : +80nS 01 Y DELAY REC 0nS/PB : 0nS 11 Y DELAY REC 0nS/PB : -80nS		00 LP 10 EP 01 SP/CARRIER SHIFT STOP 11 SP/CARRIER SHIFT		00 REC 10 PB 01 EE 11 REC-PAUSE	
0000 0010 GROUP 2 COMMOM	0 THIS BIT IS FIX	0 FIELD FREQ. 60Hz(M) 1 FIELD FREQ. 50Hz(M-BAH)	0 THESE BITS ARE FIX (FILTER 4.43 MHz/X2)			0 NORMAL 1 PB H OUT MODE	00 NTSC 10 PAL 01 MESECAM 11 SECAM	
0000 0011 GROUP 3 COMMON	000 NC1 CTL/DETAIL CTL-1 LIM=MAX 001 NC1 CTL/DETAIL CTL-2 010 NC1 CTL/DETAIL CTL-3 011 NC1 CTL/DETAIL CTL-4 100 NC1 CTL/DETAIL CTL-5 101 NC1 CTL/DETAIL CTL-6 110 NC1 CTL/DETAIL CTL-7 111 NC1 CTL/DETAIL CTL-8 LIM=MAX			0 NL WEAK 0-1.2dB: 1 NL STANDARD 10dB:	0 NL FO : 3.5MHz 1 NL FO : 2.0MHz	0 YNR MODE 1 LNC MODE	00 YNR OFF 10 YNR STANDARD 01 YNR MIDIUM 11 YNR STRONG(only PB YNR mode)	
0000 0100 GROUP 4 REC	00 WHITE CLIP LEVEL 180% 01 WHITE CLIP LEVEL 185% 10 WHITE CLIP LEVEL 190% 11 WHITE CLIP LEVEL 195%		0 ANR ON 1 ANR OFF	0 NORMAL X0/VX0 MODE 1 FORCED XO (FREE RUN MODE)	0 REC EQ TRAP 700KHz 1 REC EQ TRAP 1MHz	0 REC CUT OFF 5.5M 1 REC CUT OFF 5.0M	00 REC EQ R-LPF -3.6dB (2M TO 3.8M) 10 REC EQ R-LPF -2.9dB (2M TO 3.8M) 01 REC EQ R-LPF -2.3dB (2M TO 3.8M) 11 REC EQ R-LPF -1.8dB (2M TO 3.8M)	
0000 0101 GROUP 5 COMMON	00 REC FM LEVEL -0.9dB 01 REC FM LEVEL 0dB 10 REC FM LEVEL +0.9dB 11 REC FM LEVEL +1.8dB		0 FM AGC ON 1 FM AGC OFF (THROUGH)	1 THIS BIT IS FIX (COPY GUARD ON)	00 VIDEO INPUT 3 10 VIDEO INPUT 2 01 VIDEO INPUT 1 11 PROHIBIT		00 REC C LEVEL 0dB 01 REC C LEVEL -1.5dB 10 REC C LEVEL -3dB 11 REC C LEVEL -4.5dB	
0000 0110 GROUP 6 PB	000 PB EQ PEAK-1 NORROW 001 PB EQ PEAK-2 010 PB EQ PEAK-3 011 PB EQ PEAK-4 MIDIUM 100 PB EQ PEAK-5 101 PB EQ PEAK-6 110 PB EQ PEAK-7 111 PB EQ PEAK-8 WIDE			0 PB EQ TRAP 730KHz 1 PB EQ TRAP 1.1MHz	00 PB EQ TRAP 7M 10 PB EQ TRAP 8M 01 PB EQ TRAP 9M 11 PB EQ TRAP 10M		00 PB EQ CARR. 4.5M 10 PB EQ CARR. 5.0M 01 PB EQ CARR. 5.5M 11 PB EQ CARR. 6.0M	
0000 0111 GROUP 7 PB	00 THROUGH 10 NAP 01 BAL A-MOD 11 SYNC CARRIER OUT MODE (only REC mode)		0 APC LOOP BEFORE 1 APC LOOP AFTER	0 NORMAL 1 SQ PB MODE	0 DOC OFF 1 DOC AUTO	0 BURST DEEM -5.0dB 1 BURST DEEM -5.5dB	0 PHASE ALTERNATOR ON (only PAL-PB mode) 1 PHASE ALTERNATOR OFF	0 NORMAL PB 1 TRICK PB
0000 1000 GROUP 8 PB	00 NC2 CTL-1 K=MAX 01 NC2 CTL-2 10 NC2 CTL-3 11 NC2 CTL-4 K=MIN		0 THIS BIT IS FIX	0 VIDEO PEAK LOW 1 VIDEO FEAK HIGH	0000 PIC CTL -7dB (SOFT) 0001 PIC CTL -6dB 0010 PIC CTL -5dB 0011 PIC CTL -4dB 0100 PIC CTL -3dB 0101 PIC CTL -2dB 0110 PIC CTL -1dB 0111 PIC CTL 0dB		1000 PIC CTL 0dB 1001 PIC CTL +1dB 1010 PIC CTL +2dB 1011 PIC CTL +3dB 1100 PIC CTL +4dB 1101 PIC CTL +5dB 1110 PIC CTL +6dB 1111 PIC CTL +7dB (SHARPNESS)	
0000 1001 GROUP 9 AUDIO	10 THESE BITS ARE FIX		00 SP (AUDIO) 01 LP (AUDIO) 10 EP (AUDIO) 11 PROHIBIT		00 AUDIO INPUT 3 10 AUDIO INPUT 2 01 AUDIO INPUT 1 11 PRIHIBIT		00 EE (AUDIO) 10 PB (AUDIO) 01 REC (AUDIO) 11 PROHIBIT	

8-10. SANYO A/V 1CHIP SERIAL DATA (PAL 4H'D)

PAL SP

EE/REC/PB								
GROUP 1	0	0	0	1	1	1		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	1	0	0	0	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

PAL LP

EE/REC/PB								
GROUP 1	0	0	0	1	0	0		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	1	1	0	1	0	1	0
GROUP 7	0	0	1	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	0	1	0	1	0	1	0
GROUP 7	0	1	1	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM SP

EE/REC/PB								
GROUP 1	0	1	0	1	1	1		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	1	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	1	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM LP

EE/REC/PB								
GROUP 1	0	1	0	1	0	0		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	1	1	1	1	0	1	0
GROUP 7	0	0	1	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	1	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	0	1	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

* The 1st and bit of GROUP 1 and GROUP 9 are automatically changed according to the mode (REC, PB, EE)

* The 3rd and 4th bit of GROUP 5 and GROUP 9 are automatically changed according to the 1 PERI or 2 PERI option.

* In case of NTSC PB, the 7th bit of GROUP 2, the 2nd and 1st bit of GROUP 2, and the 8th and 7th bit of GROUP 7 are automatically changed to "0", "00", and "10" respectively based on PAL DATA.

8-11. SANYO A/V 1CHIP SERIAL DATA (PAL 2H'D) SP

PAL SP

EE/REC/PB								
GROUP 1	0	0	0	1	1	1		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	0	1	0	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM SP

EE/REC/PB								
GROUP 1	0	1	0	1	1	1		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	1	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	0	1	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

* The 1st and bit of GROUP 1 and GROUP 9 are automatically changed according to the mode (REC, PB, EE)

* The 3rd and 4th bit of GROUP 5 and GROUP 9 are automatically changed according to the 1 PERI or 2 PERI option.

* In case of NTSC PB, the 7th bit of GROUP 2, the 2nd and 1st bit of GROUP 2, and the 8th and 7th bit of GROUP 7 are automatically changed to "0", "00", and "10" respectively based on PAL DATA.

8-12. SANYO A/V 1CHIP SERIAL DATA (PAL 2H'D SP/LP)

PAL SP

EE/REC/PB								
GROUP 1	0	0	0	1	1	1		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

PAL LP

EE/REC/PB								
GROUP 1	0	0	0	1	0	0		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	0
GROUP 6	0	0	1	0	1	0	1	0
GROUP 7	0	0	1	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	0
GROUP 6	0	0	1	0	1	0	1	0
GROUP 7	0	1	1	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM SP

EE/REC/PB								
GROUP 1	0	1	0	1	1	1		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	1	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	1	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM LP

EE/REC/PB								
GROUP 1	0	1	0	1	0	0		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	0	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	0
GROUP 6	0	0	1	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	1	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	1	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	0
GROUP 6	0	0	0	0	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

* The 1st and bit of GROUP 1 and GROUP 9 are automatically changed according to the mode (REC, PB, EE)
* The 3rd and 4th bit of GROUP 5 and GROUP 9 are automatically changed according to the 1 PERI or 2 PERI option.
* In case of NTSC PB, the 7th bit of GROUP 2, the 2nd and 1st bit of GROUP 2, and the 8th and 7th bit of GROUP 7 are automatically changed to "0", "00", and "10" respectively based on PAL DATA.

8-13. SANYO A/V 1CHIP SERIAL DATA (SECAM 4H'D)

PAL SP

EE/REC/PB								
GROUP 1	0	0	0	1	1	1		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	0	1	0	0	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

PAL LP

EE/REC/PB								
GROUP 1	0	0	0	1	0	0		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	1	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	0
GROUP 6	0	0	0	0	1	0	1	0
GROUP 7	0	1	1	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM SP

EE/REC/PB								
GROUP 1	0	1	0	1	1	1		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	1	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	1	1	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	0	1	1	0	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM LP

EE/REC/PB								
GROUP 1	0	1	0	1	0	0		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	0
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	1	0	0	1	0	0	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

SECAM SP

EE/REC/PB								
GROUP 1	0	0	1	0	1	1		
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	1	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	1	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	1	0	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	1	1	1	1
GROUP 5	0	1	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

SECAM LP

EE/REC/PB								
GROUP 1	0	0	1	0	0	0		
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	1	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	0	1	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	1	0	0	0	1	0
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	0	1
GROUP 4	1	0	1	0	1	0	1	1
GROUP 5	0	1	0	1	1	0	0	1
GROUP 6	0	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	1	1	0	1	0
	8	7	6	5	4	3	2	1

8-14. SANYO A/V 1CHIP SERIAL DATA (SECAM 2H'D)

PAL SP

EE/REC/PB								
GROUP 1	0	0	0	1	1	1		
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	1	0	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	0	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	1	0
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	0	0	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	0	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

MESECAM SP

EE/REC/PB								
GROUP 1	0	1	0	1	1	1		
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	1	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	1	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

TRICK PLAY								
GROUP 1	0	1	0	1	1	1	1	0
GROUP 2	1	1	1	1	1	1	0	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	1	0	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	0	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

SECAM SP

EE/REC/PB								
GROUP 1	0	0	1	0	1	1		
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	1	0
GROUP 4	1	0	1	0	1	0	0	1
GROUP 5	1	0	0	1	0	0	1	1
GROUP 6	1	0	0	1	1	0	1	0
GROUP 7	0	0	0	0	1	0	0	0
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0		
	8	7	6	5	4	3	2	1

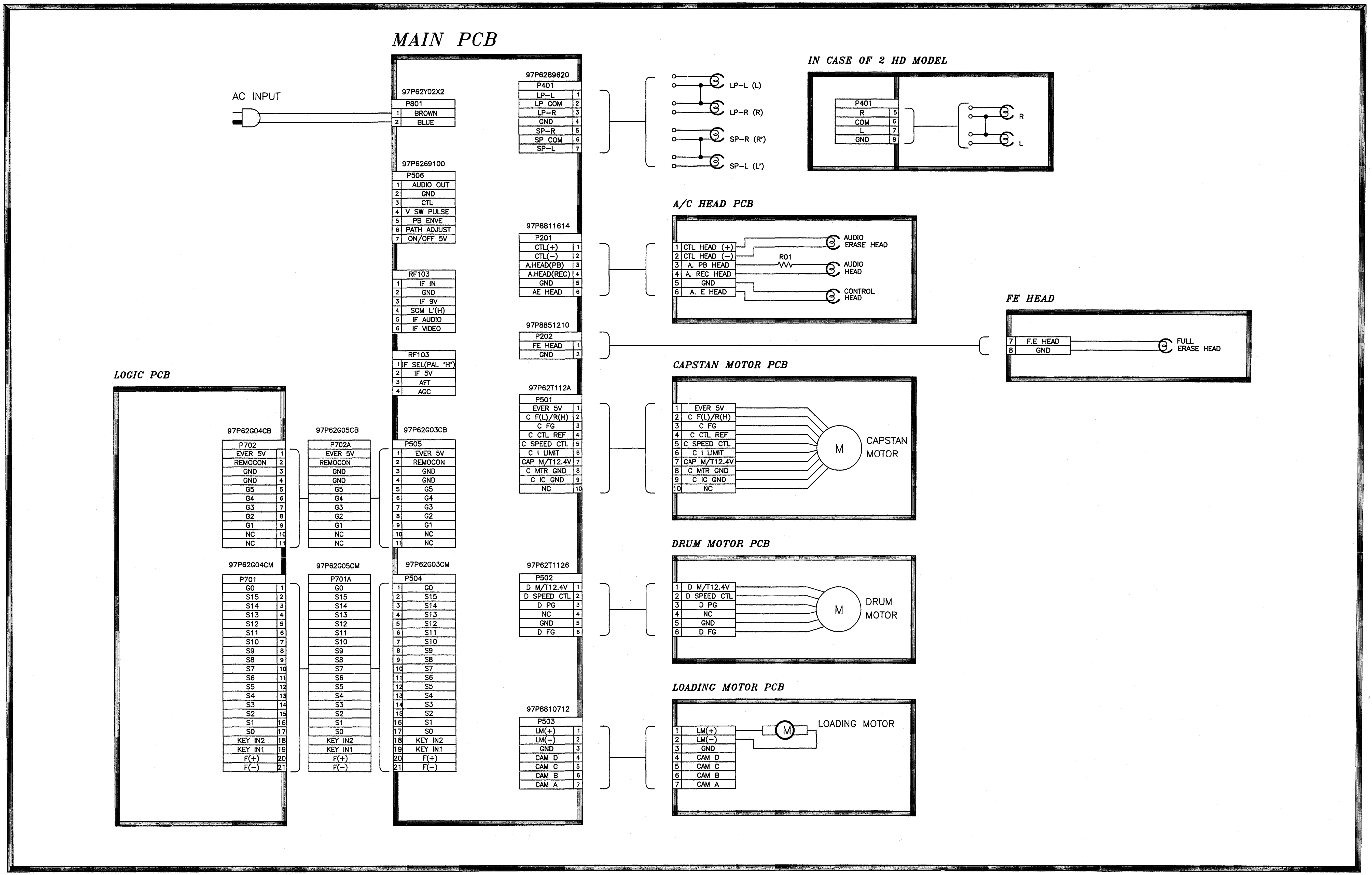
TRICK PLAY								
GROUP 1	0	0	1	0	1	1	0	1
GROUP 2	1	1	1	1	1	1	1	1
GROUP 3	1	0	0	0	0	0	1	1
GROUP 4	1	0	1	0	1	0	0	1
GROUP 5	1	0	0	1	1	0	1	1
GROUP 6	0	1	0	1	1	0	1	0
GROUP 7	0	0	0	0	0	0	1	1
GROUP 8	1	0	0	1	1	0	0	0
GROUP 9	1	0	0	0	1	0	1	0
	8	7	6	5	4	3	2	1

* The 1st and bit of GROUP 1 and GROUP 9 are automatically changed according to the mode (REC, PB, EE)

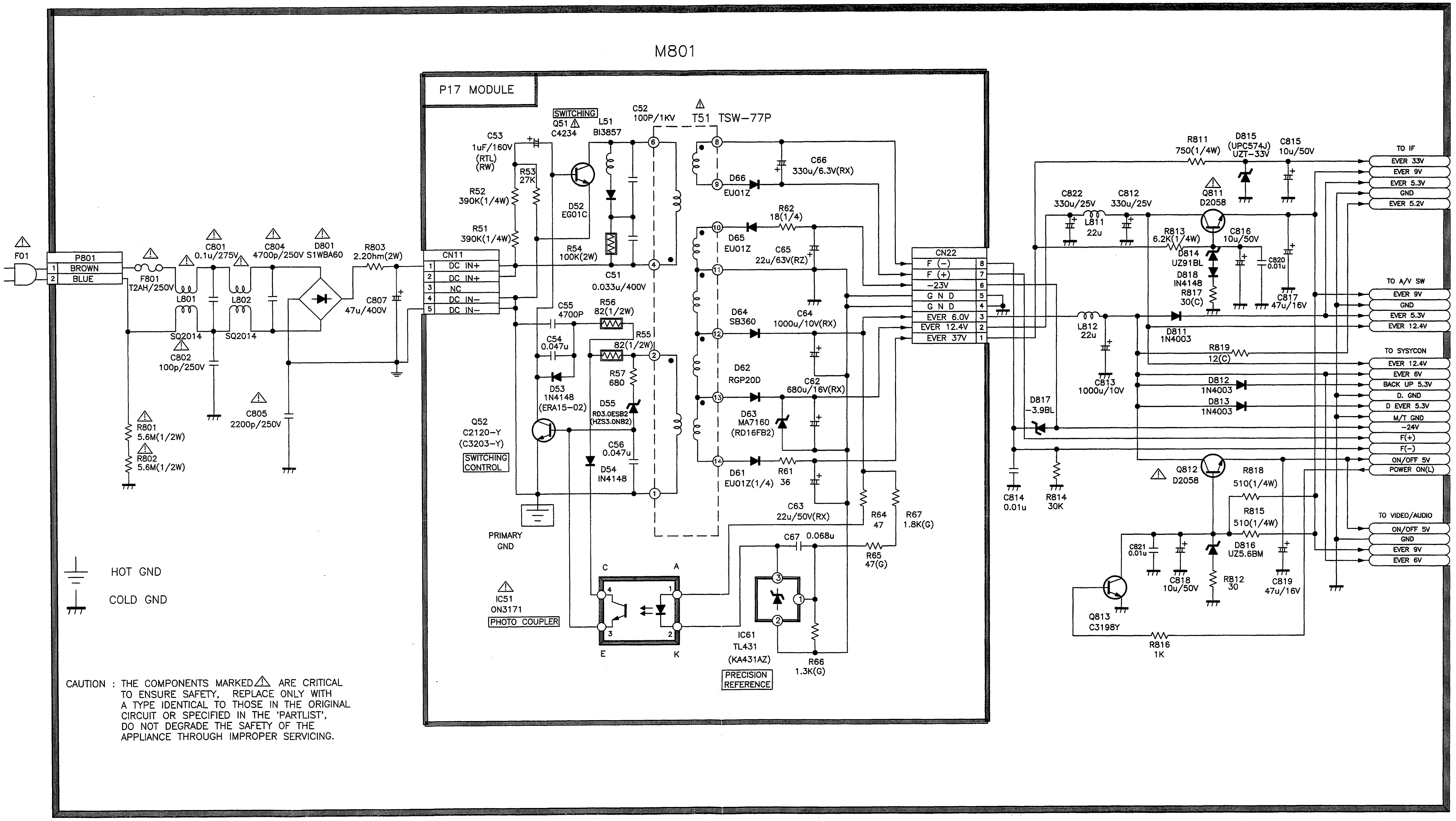
* The 3rd and 4th bit of GROUP 5 and GROUP 9 are automatically changed according to the 1 PERI or 2 PERI option.

* In case of NTSC PB, the 7th bit of GROUP 2, the 2nd and 1st bit of GROUP 2, and the 8th and 7th bit of GROUP 7 are automatically changed to "0", "00", and "10" respectively based on PAL DATA.

9-1. CONNECTION DIAGRAM

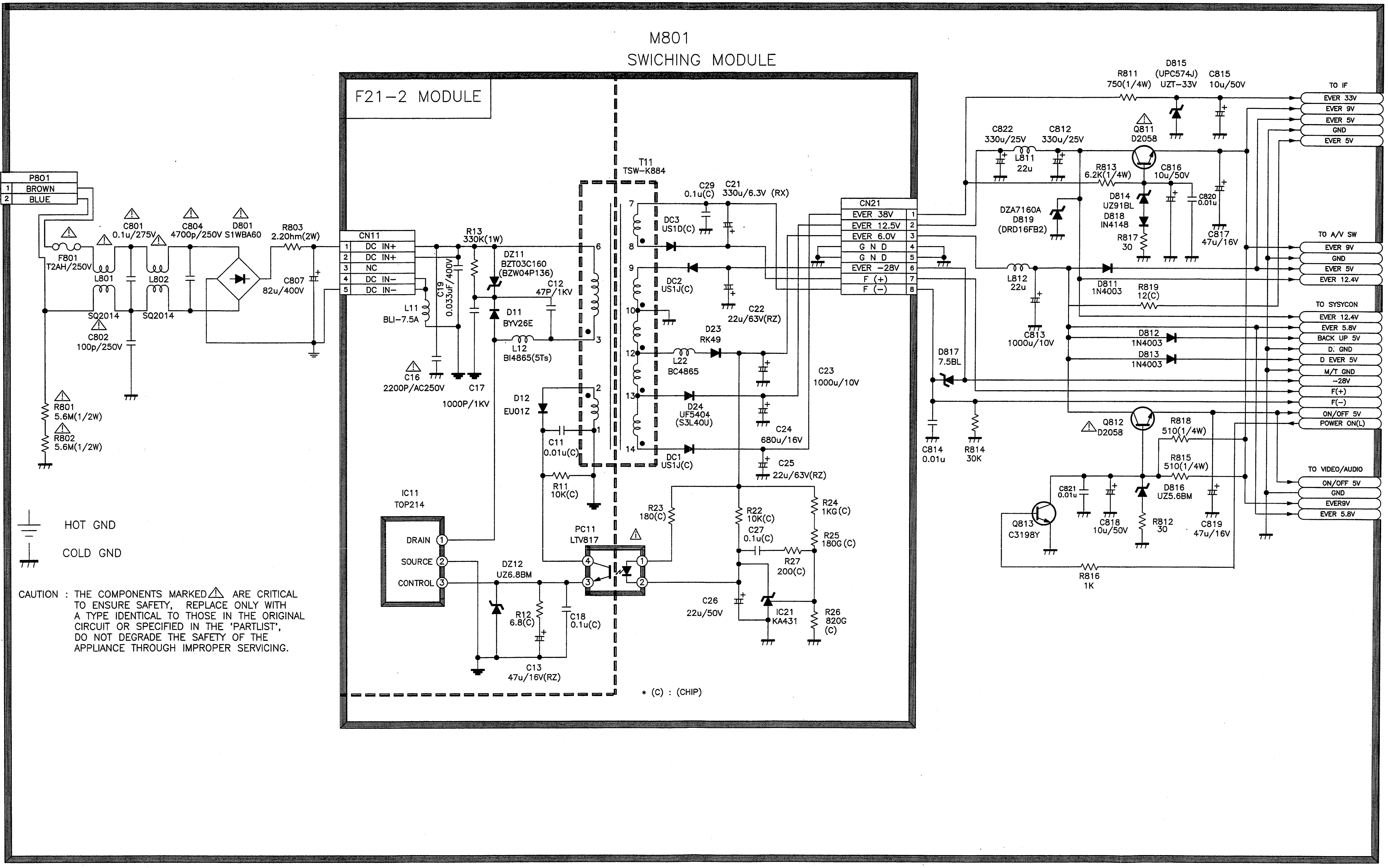

MAIN PCB
AC INPUT
97P62Y02X2
P801
1 BROWN
2 BLUE
97P6269100
P506
1 AUDIO OUT
2 GND
3 CTL
4 V SW PULSE
5 PB ENVE
6 PATH ADJUST
7 ON/OFF 5V
RF103
1 IF IN
2 GND
3 IF 9V
4 SCM L'(H)
5 IF AUDIO
6 IF VIDEO
RF103
1 IF SEL(PAL 'H')
2 IF 5V
3 AFT
4 AGC
97P6289620
P401
LP-L 1
LP COM 2
LP-R 3
GND 4
SP-R 5
SP COM 6
SP-L 7
LP-L (L)
LP-R (R)
SP-R (R')
SP-L (L')
IN CASE OF 2 HD MODEL
P401
R 5
COM 6
L 7
GND 8
R
L
97P8811614
P201
CTL(+) 1
CTL(-) 2
A.HEAD(PB) 3
A.HEAD(REC) 4
GND 5
AE HEAD 6
A/C HEAD PCB
1 CTL HEAD (+)
2 CTL HEAD (-)
3 A. PB HEAD
4 A. REC HEAD
5 GND
6 A. E HEAD
R01
AUDIO ERASE HEAD
AUDIO HEAD
CONTROL HEAD
97P8851210
P202
FE HEAD 1
GND 2
FE HEAD
7 F.E HEAD
8 GND
FULL ERASE HEAD
97P62T112A
P501
EVER 5V 1
C F(L)/R(H) 2
C FG 3
C CTL REF 4
C SPEED CTL 5
C I LIMIT 6
CAP M/T12.4V 7
C MTR GND 8
C IC GND 9
NC 10
CAPSTAN MOTOR PCB
1 EVER 5V
2 C F(L)/R(H)
3 C FG
4 C CTL REF
5 C SPEED CTL
6 C I LIMIT
7 CAP M/T12.4V
8 C MTR GND
9 C IC GND
10 NC
M
CAPSTAN MOTOR
97P62T1126
P502
D M/T12.4V 1
D SPEED CTL 2
D PG 3
NC 4
GND 5
D FG 6
DRUM MOTOR PCB
1 D M/T12.4V
2 D SPEED CTL
3 D PG
4 NC
5 GND
6 D FG
M
DRUM MOTOR
97P8810712
P503
LM(+) 1
LM(-) 2
GND 3
CAM D 4
CAM C 5
CAM B 6
CAM A 7
LOADING MOTOR PCB
1 LM(+)
2 LM(-)
3 GND
4 CAM D
5 CAM C
6 CAM B
7 CAM A
M
LOADING MOTOR
LOGIC PCB
97P62G04CB
P702
EVER 5V 1
REMOCON 2
GND 3
GND 4
G5 5
G4 6
G3 7
G2 8
G1 9
NC 10
NC 11
97P62G05CB
P702A
EVER 5V
REMOCON
GND
GND
G5
G4
G3
G2
G1
NC
NC
97P62G03CB
P505
1 EVER 5V
2 REMOCON
3 GND
4 GND
5 G5
6 G4
7 G3
8 G2
9 G1
10 NC
11 NC
97P62G04CM
P701
G0 1
S15 2
S14 3
S13 4
S12 5
S11 6
S10 7
S9 8
S8 9
S7 10
S6 11
S5 12
S4 13
S3 14
S2 15
S1 16
S0 17
KEY IN2 18
KEY IN1 19
F(+) 20
F(-) 21
97P62G05CM
P701A
G0
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
S0
KEY IN2
KEY IN1
F(+)
F(-)
97P62G03CM
P504
1 G0
2 S15
3 S14
4 S13
5 S12
6 S11
7 S10
8 S9
9 S8
10 S7
11 S6
12 S5
13 S4
14 S3
15 S2
16 S1
17 S0
18 KEY IN2
19 KEY IN1
20 F(+)
21 F(-)

9-2. POWER CIRCUIT DIAGRAM (230V ONLY)


M801
P17 MODULE
F01
P801
1 BROWN
2 BLUE
F801
T2AH/250V
L801
L802
SQ2014
SQ2014
C801
0.1u/275V
C804
4700p/250V
D801
S1WBA60
R803
2.2Ohm(2W)
C807
47u/400V
C802
100p/250V
C805
2200p/250V
R801
5.6M(1/2W)
R802
5.6M(1/2W)
HOT GND
COLD GND
CN11
1 DC IN+
2 DC IN+
3 NC
4 DC IN-
5 DC IN-
C53
1uF/160V
(RTL)
(RW)
R53
27K
R52
390K(1/4W)
R51
390K(1/4W)
SWITCHING
Q51
C4234
L51
BI3857
D52
EG01C
R54
100K(2W)
C52
100P/1KV
T51 TSW-77P
C51
0.033u/400V
C55
4700P
R56
82(1/2W)
C54
0.047u
R55
82(1/2W)
D53
1N4148
(ERA15-02)
R57
680
D55
RD3.0ESB2
(HZS3.0NB2)
Q52
C2120-Y
(C3203-Y)
SWITCHING CONTROL
C56
0.047u
D54
1N4148
PRIMARY GND
IC51
ON3171
PHOTO COUPLER
C
A
E
K
D66
EU01Z
C66
330u/6.3V(RX)
R62
18(1/4)
D65
EU01Z
C65
22u/63V(RZ)
D64
SB360
C64
1000u/10V(RX)
D62
RGP20D
C62
680u/16V(RX)
D63
MA7160
(RD16FB2)
D61
EU01Z(1/4)
R61
36
C63
22u/50V(RX)
R64
47
R67
1.8K(G)
C67 0.068u
R65
47(G)
IC61
TL431
(KA431AZ)
PRECISION REFERENCE
R66
1.3K(G)
CN22
F (-) 8
F (+) 7
-23V 6
G N D 5
G N D 4
EVER 6.0V 3
EVER 12.4V 2
EVER 37V 1
R811
750(1/4W)
D815
(UPC574J)
UZT-33V
C815
10u/50V
C822
330u/25V
C812
330u/25V
L811
22u
Q811
D2058
R813
6.2K(1/4W)
D814
UZ91BL
D818
IN4148
R817
30(C)
C816
10u/50V
C820
0.01u
C817
47u/16V
L812
22u
C813
1000u/10V
D811
1N4003
R819
12(C)
D812
1N4003
D813
1N4003
D817
-3.9BL
C814
0.01u
R814
30K
Q812
D2058
R818
510(1/4W)
R815
510(1/4W)
C821
0.01u
C818
10u/50V
D816
UZ5.6BM
R812
30
C819
47u/16V
Q813
C3198Y
R816
1K
TO IF
EVER 33V
EVER 9V
EVER 5.3V
GND
EVER 5.2V
TO A/V SW
EVER 9V
GND
EVER 5.3V
EVER 12.4V
TO SYSYCON
EVER 12.4V
EVER 6V
BACK UP 5.3V
D. GND
D EVER 5.3V
M/T GND
-24V
F(+)
F(-)
ON/OFF 5V
POWER ON(L)
TO VIDEO/AUDIO
ON/OFF 5V
GND
EVER 9V
EVER 6V

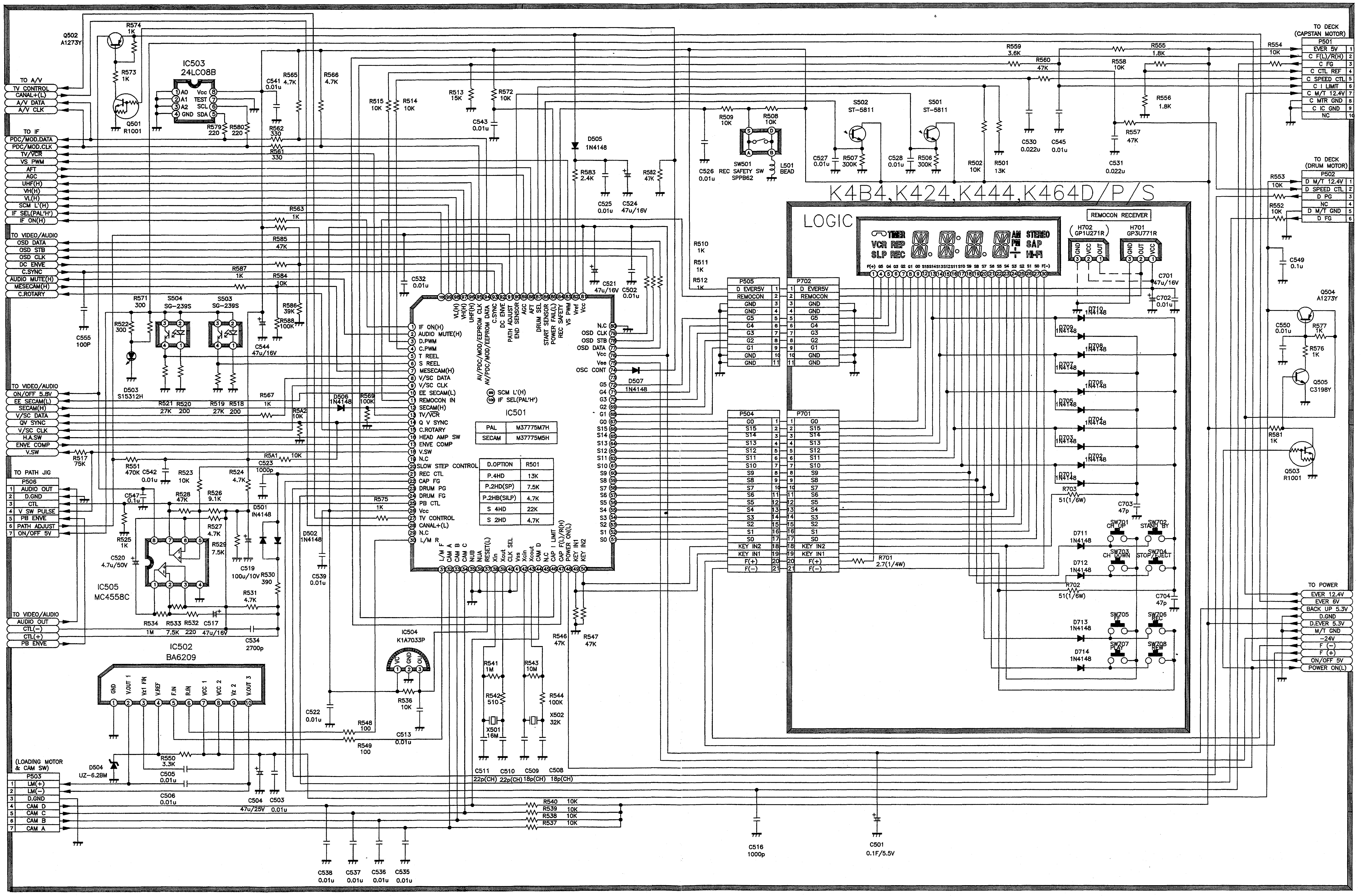
CAUTION : THE COMPONENTS MARKED ⚠ ARE CRITICAL TO ENSURE SAFETY, REPLACE ONLY WITH A TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THE 'PARTLIST', DO NOT DEGRADE THE SAFETY OF THE APPLIANCE THROUGH IMPROPER SERVICING.

9-3. POWER CIRCUIT DIAGRAM (WIDE)

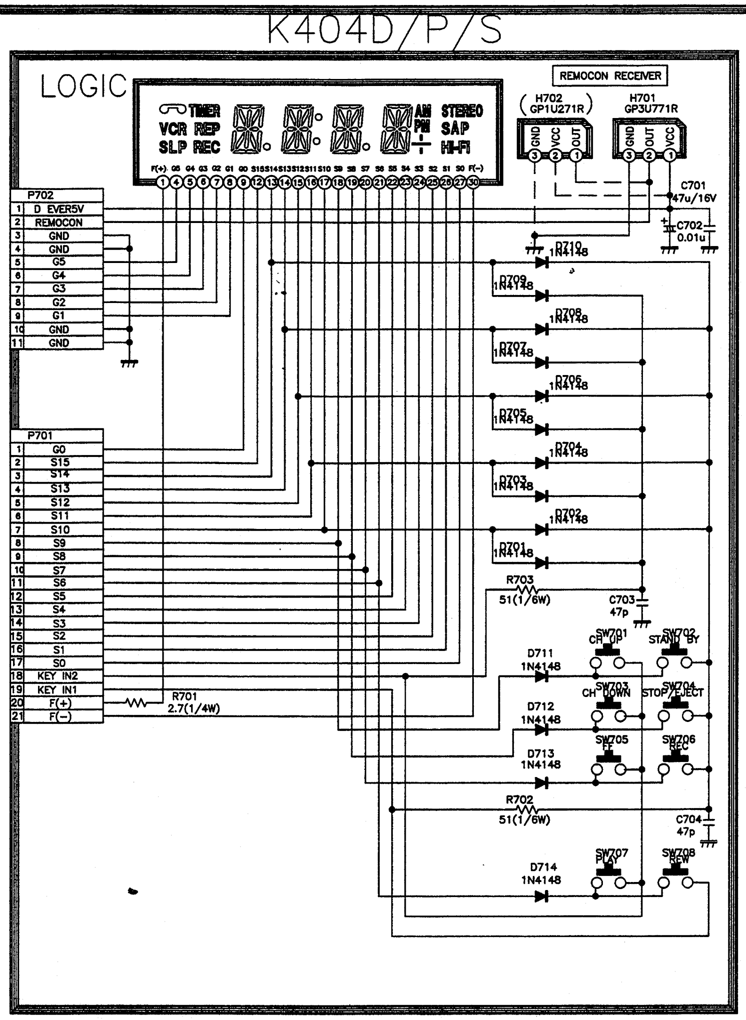

M801
SWICHING MODULE
F21-2 MODULE
F01
P801
1 BROWN
2 BLUE
F801
T2AH/250V
C801
0.1u/275V
L801
SQ2014
C802
100p/250V
C804
4700p/250V
L802
SQ2014
D801
S1WBA60
R803
2.2Ohm(2W)
C807
82u/400V
R801
5.6M(1/2W)
R802
5.6M(1/2W)
CN11
1 DC IN+
2 DC IN+
3 NC
4 DC IN-
5 DC IN-
L11
BLI-7.5A
C19
0.033uF/400V
R13
330K(1W)
DZ11
BZT03C160
(BZW04P136)
C12
47P/1KV
D11
BYV26E
L12
BI4865(5Ts)
C16
2200P/AC250V
C17
1000P/1KV
D12
EU01Z
C11
0.01u(C)
R11
10K(C)
IC11
TOP214
DRAIN ①
SOURCE ②
CONTROL ③
DZ12
UZ6.8BM
R12
6.8(C)
C18
0.1u(C)
C13
47u/16V(RZ)
PC11
LTV817
T11
TSW-K884
C29
0.1u(C)
C21
330u/6.3V (RX)
DC3
US1D(C)
DC2
US1J(C)
C22
22u/63V(RZ)
D23
RK49
L22
BC4865
D24
UF5404
(S3L40U)
DC1
US1J(C)
C23
1000u/10V
C24
680u/16V
C25
22u/63V(RZ)
R23
180(C)
R22
10K(C)
C27
0.1u(C)
R24
1KG(C)
R25
180G(C)
R27
200(C)
C26
22u/50V
IC21
KA431
R26
820G
(C)
* (C) : (CHIP)
CN21
EVER 38V 1
EVER 12.5V 2
EVER 6.0V 3
G N D 4
G N D 5
EVER -28V 6
F (+) 7
F (-) 8
R811
750(1/4W)
D815
(UPC574J)
UZT-33V
C815
10u/50V
C822
330u/25V
C812
330u/25V
L811
22u
Q811
D2058
R813
6.2K(1/4W)
C816
10u/50V
D814
UZ91BL
D818
IN4148
C820
0.01u
DZA7160A
D819
(DRD16FB2)
R817
30
C817
47u/16V
L812
22u
D811
1N4003
R819
12(C)
C813
1000u/10V
D812
1N4003
D813
1N4003
D817
7.5BL
C814
0.01u
R814
30K
Q812
D2058
R818
510(1/4W)
R815
510(1/4W)
C821
0.01u
C818
10u/50V
D816
UZ5.6BM
R812
30
C819
47u/16V
Q813
C3198Y
R816
1K
TO IF
EVER 33V
EVER 9V
EVER 5V
GND
EVER 5V
TO A/V SW
EVER 9V
GND
EVER 5V
EVER 12.4V
TO SYSYCON
EVER 12.4V
EVER 5.8V
BACK UP 5V
D. GND
D EVER 5V
M/T GND
-28V
F(+)
F(-)
ON/OFF 5V
POWER ON(L)
TO VIDEO/AUDIO
ON/OFF 5V
GND
EVER9V
EVER 5.8V
HOT GND
COLD GND

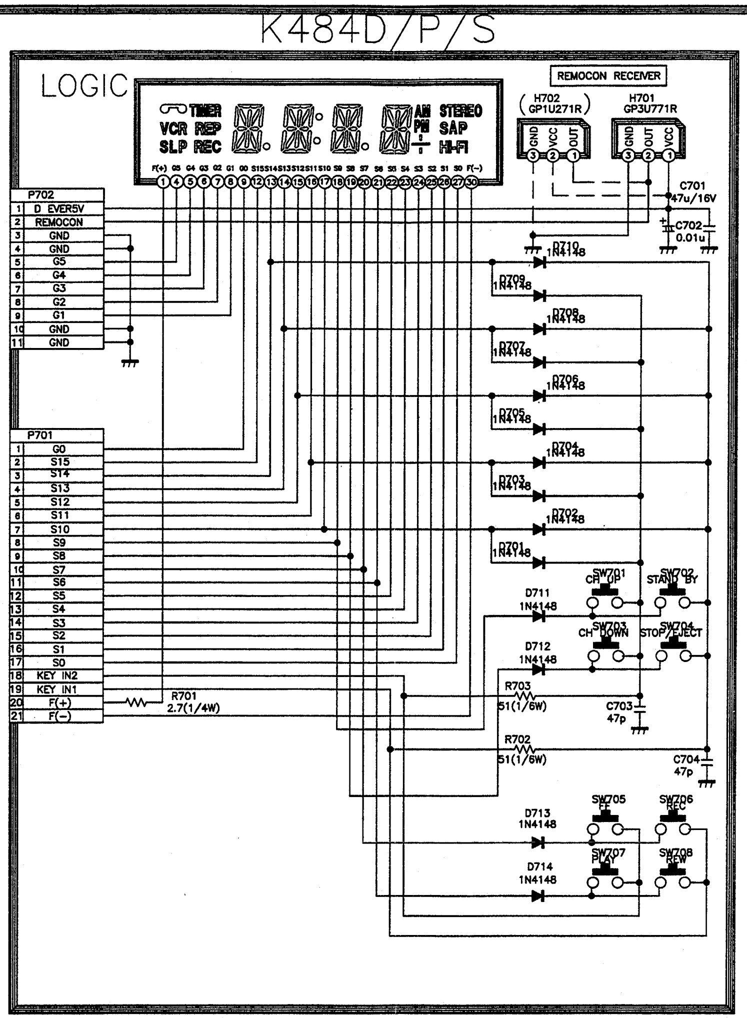
CAUTION : THE COMPONENTS MARKED⚠ ARE CRITICAL TO ENSURE SAFETY, REPLACE ONLY WITH A TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THE 'PARTLIST', DO NOT DEGRADE THE SAFETY OF THE APPLIANCE THROUGH IMPROPER SERVICING.

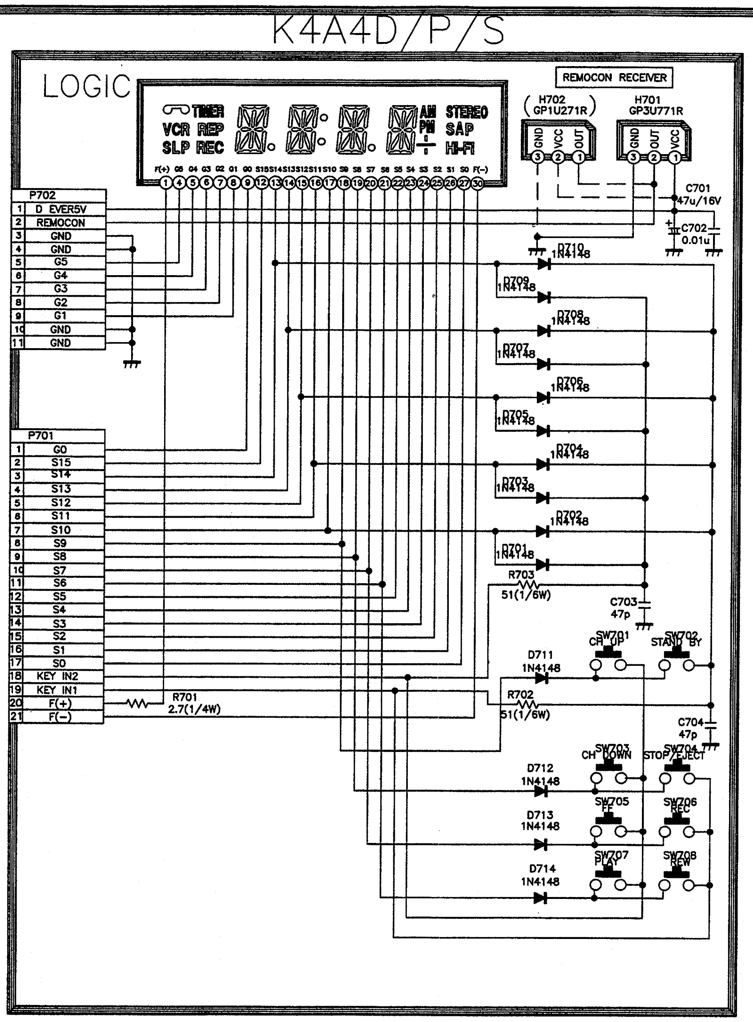
9-4. SYSCON AND LOGIC CIRCUIT DIAGRAM


TO A/V
TV CONTROL
CANAL+(L)
A/V DATA
A/V CLK
TO IF
PDC/MOD.DATA
PDC/MOD.CLK
TV/VCR
VS PWM
AFT
AGC
UHF(H)
VH(H)
VL(H)
SCM L'(H)
IF SEL(PAL'H')
IF ON(H)
TO VIDEO/AUDIO
OSD DATA
OSD STB
OSD CLK
DC ENVE
C.SYNC
AUDIO MUTE(H)
MESECAM(H)
C.ROTARY
TO VIDEO/AUDIO
ON/OFF 5.8V
EE SECAM(L)
SECAM(H)
V/SC DATA
Q/V SYNC
V/SC CLK
H.A.SW
ENVE COMP
V.SW
TO PATH JIG
P506
AUDIO OUT
D.GND
CTL
V SW PULSE
PB ENVE
PATH ADJUST
ON/OFF 5V
TO VIDEO/AUDIO
AUDIO OUT
CTL(-)
CTL(+)
PB ENVE
(LOADING MOTOR & CAM SW)
P503
LM(+)
LM(-)
D.GND
CAM D
CAM C
CAM B
CAM A
Q502 A1273Y
R574 1K
R573 1K
Q501 R1001
IC503 24LC08B
A0 A1 A2 GND Vcc TEST SCL SDA
R579 220
R580 220
C541 0.01u
R565 4.7K
R566 4.7K
R562 330
R561 330
R563 1K
R585 47K
R587 1K
R584 10K
R586 39K
R588 100K
C544 47u/16V
C532 0.01u
R571 300
R522 300
S504 SG-239S
S503 SG-239S
D503 S15312H
C555 100P
R521 27K
R520 200
R519 27K
R518 200
R567 1K
R5A2 10K
D506 1N4148
R569 100K
R517 75K
R551 470K
C542 0.01u
R523 10K
R524 4.7K
C523 1000p
R5A1 10K
C547 0.1u
R528 47K
R526 9.1K
D501 1N4148
R575 1K
R527 4.7K
R529 7.5K
R525 1K
C520 4.7u/50V
C519 100u/10V
R530 390
R531 4.7K
IC505 MC4558C
R534 1M
R533 7.5K
R532 220
C517 47u/16V
C534 2700p
IC502 BA6209
GND V.OUT 1 Vz1 FIN V.REF R.IN VCC 1 VCC 2 Vz 2 V.OUT 3
D504 UZ-6.2BM
R550 3.3K
C505 0.01u
C506 0.01u
C504 47u/25V
C503 0.01u
D502 1N4148
C539 0.01u
C522 0.01u
R548 100
R549 100
C513 0.01u
IC504 K1A7033P
VCC GND OUT
R536 10K
R515 10K
R514 10K
R513 15K
R572 10K
C543 0.01u
D505 1N4148
R583 2.4K
C525 0.01u
C524 47u/16V
R582 47K
C521 47u/16V
C502 0.01u
IC501
IF ON(H)
AUDIO MUTE(H)
D.PWM
C.PWM
T REEL
S REEL
MESECAM(H)
V/SC DATA
V/SC CLK
EE SECAM(L)
REMOCON IN
SECAM(H)
TV/VCR
Q V SYNC
C.ROTARY
HEAD AMP SW
ENVE COMP
V.SW
N.C
SLOW STEP CONTROL
REC CTL
CAP FG
DRUM PG
DRUM FG
PB CTL
Vcc
TV CONTROL
CANAL+(L)
N.C
L/M R
L/M F
CAM A
CAM B
CAM C
NUB
NUA
RESET(L)
Xin
Xout
CLK SEL
Vss
Xcin
Xcout
CAM D
N.C
CAP I LIMIT
CAP F(L)/R(H)
POWER ON(L)
KEY IN1
KEY IN2
VL(H)
VH(H)
UHF(H)
AV/PDC/MOD/EEPROM CLK
AV/PDC/MOD/EEPROM DATA
C.SYNC
DC ENVE
PATH ADJUST
END SENSOR
AGC
AFT
SEL
DRUM SENSOR
START SENSOR
POWER FAIL(L)
REC SAFETY
VS PWM
Vref
Vcc
N.C
OSD CLK
OSD STB
OSD DATA
Vcc
Vee
OSC CONT
G5 G4 G3 G2 G1 G0
S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 S0
SCM L'(H)
IF SEL(PAL'H')
D507 1N4148
PAL M37775M7H
SECAM M37775M5H
D.OPTION R501
P.4HD 13K
P.2HD(SP) 7.5K
P.2HB(SILP) 4.7K
S 4HD 22K
S 2HD 4.7K
R546 47K
R547 47K
R541 1M
R543 10M
R542 510
R544 100K
X501 16M
X502 32K
C511 22p(CH)
C510 22p(CH)
C509 18p(CH)
C508 18p(CH)
R540 10K
R539 10K
R538 10K
R537 10K
C538 0.01u
C537 0.01u
C536 0.01u
C535 0.01u
C516 1000p
C501 0.1F/5.5V
R509 10K
R508 10K
SW501 REC SAFETY SW SPPB62
L501 BEAD
C526 0.01u
R510 1K
R511 1K
R512 1K
S502 ST-5811
S501 ST-5811
C527 0.01u
R507 300K
C528 0.01u
R506 300K
R502 10K
R501 13K
R559 3.6K
R560 47K
R555 1.8K
R558 10K
R556 1.8K
R557 47K
C530 0.022u
C545 0.01u
C531 0.022u
R554 10K
TO DECK (CAPSTAN MOTOR)
P501
EVER 5V
C F(L)/R(H)
C FG
C CTL REF
C SPEED CTL
C I LIMIT
C M/T 12.4V
C MTR GND
C IC GND
NC
TO DECK (DRUM MOTOR)
P502
R553 10K
R552 10K
D M/T 12.4V
D SPEED CTL
D PG
NC
D M/T GND
D FG
K4B4,K424,K444,K464D/P/S
LOGIC
TIMER
VCR REP
SLP REC
AM PM
STEREO SAP HI-FI
REMOCON RECEIVER
H702 (GP1U271R)
H701 GP3U771R
GND VCC OUT
C701 47u/16V
C702 0.01u
C549 0.1u
Q504 A1273Y
C550 0.01u
R577 1K
R576 1K
Q505 C3198Y
R581 1K
Q503 R1001
P505
P702
D EVER5V
REMOCON
GND
GND
G5 G4 G3 G2 G1
GND
GND
P504
P701
G0
S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 S0
KEY IN2
KEY IN1
F(+)
F(-)
R701 2.7(1/4W)
D710 1N4148
D709 1N4148
D708 1N4148
D707 1N4148
D706 1N4148
D705 1N4148
D704 1N4148
D703 1N4148
D702 1N4148
D701 1N4148
R703 51(1/6W)
C703 47p
SW701 CH UP
SW702 STAND BY
SW703 CH DOWN
SW704 STOP/EJECT
D711 1N4148
D712 1N4148
R702 51(1/6W)
C704 47p
D713 1N4148
D714 1N4148
SW705 FF
SW706 REC
SW707 PLAY
SW708 REW
TO POWER
EVER 12.4V
EVER 6V
BACK UP 5.3V
D.GND
D.EVER 5.3V
M/T GND
-24V
F (-)
F (+)
ON/OFF 5V
POWER ON(L)

9-5. LOGIC CIRCUIT DIAGRAM


K404D/P/S
LOGIC
REMOCON RECEIVER
H702 GP1U271R
H701 GP3U771R
TIMER VCR REP SLP REC
AM PM STEREO SAP HI-FI
P702
D EVER5V
REMOCON
GND
G5
G4
G3
G2
G1
P701
G0
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
S0
KEY IN2
KEY IN1
F(+)
F(-)
R701 2.7(1/4W)
C701 47u/16V
C702 0.01u
D701–D710 1N4148
R703 51(1/6W)
R702 51(1/6W)
C703 47p
C704 47p
D711 1N4148
D712 1N4148
D713 1N4148
D714 1N4148
SW701 CH UP
SW702 STAND BY
SW703 CH DOWN
SW704 STOP/EJECT
SW705 FF
SW706 REC
SW707 PLAY
SW708 REW


K484D/P/S
LOGIC
REMOCON RECEIVER
H702 GP1U271R
H701 GP3U771R
TIMER VCR REP SLP REC
AM PM STEREO SAP HI-FI
P702
P701
R701 2.7(1/4W)
C701 47u/16V
C702 0.01u
D701–D710 1N4148
D711 1N4148
D712 1N4148
D713 1N4148
D714 1N4148
R703 51(1/6W)
R702 51(1/6W)
C703 47p
C704 47p
SW701 CH UP
SW702 STAND BY
SW703 CH DOWN
SW704 STOP/EJECT
SW705 FF
SW706 REC
SW707 PLAY
SW708 REW


K4A4D/P/S
LOGIC
REMOCON RECEIVER
H702 GP1U271R
H701 GP3U771R
TIMER VCR REP SLP REC
AM PM STEREO SAP HI-FI
P702
P701
R701 2.7(1/4W)
C701 47u/16V
C702 0.01u
D701–D710 1N4148
D711 1N4148
D712 1N4148
D713 1N4148
D714 1N4148
R703 51(1/6W)
R702 51(1/6W)
C703 47p
C704 47p
SW701 CH UP
SW702 STAND BY
SW703 CH DOWN
SW704 STOP/EJECT
SW705 FF
SW706 REC
SW707 PLAY
SW708 REW

THE OPTION TABLE OF THE 2nd MASKED MICOM FOR K484D/K884D MODELS

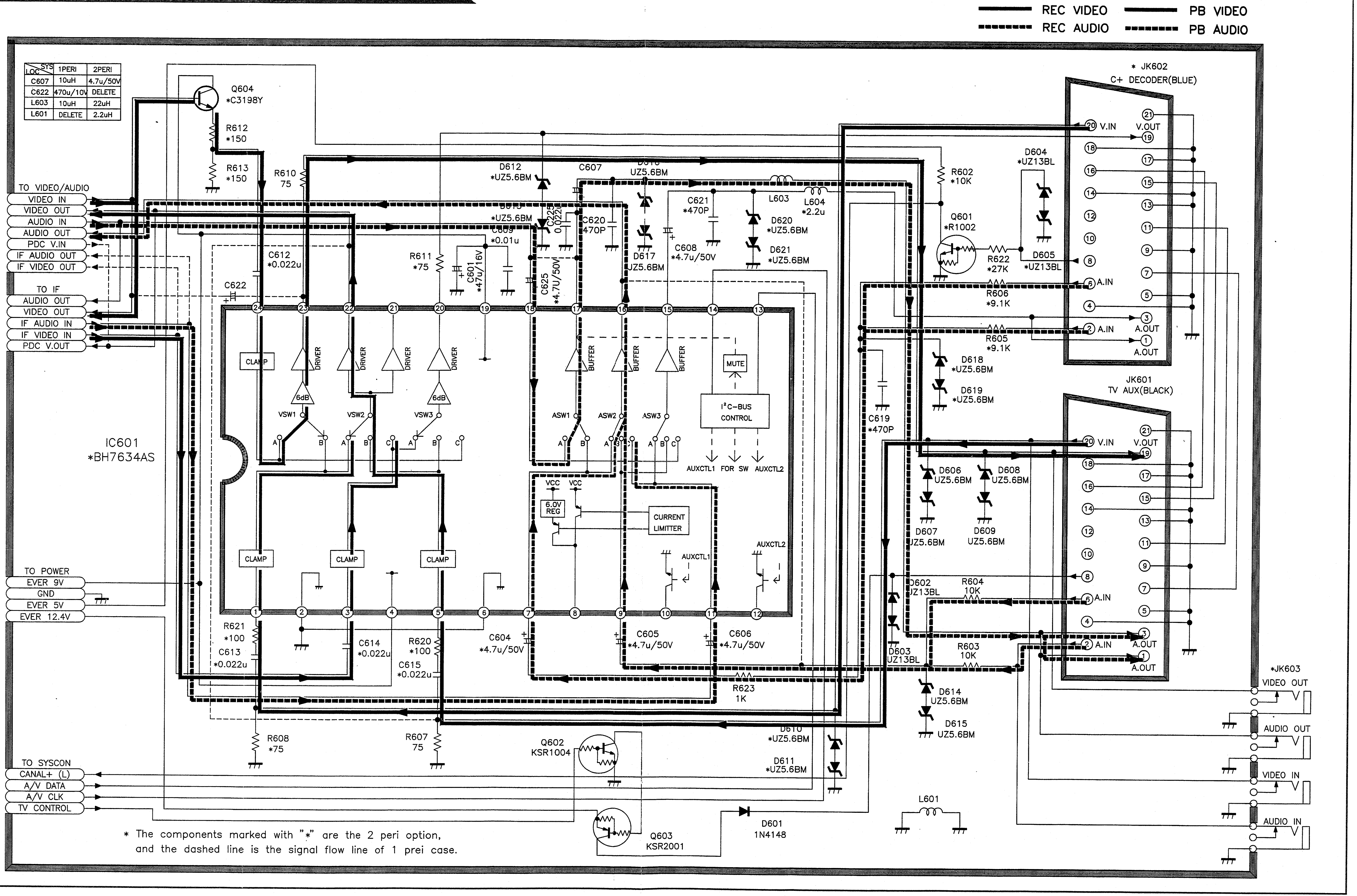
OPTION / DIODE	BROADCASTING SYSTEM				A/V JACK		PDC/A. SET		SVC MODE		GEMSTAR		HI-FI			DISPLAY		OFFSET TIME	
	B/G		G/K	1)I/I	1PERI(PHONO)	2PERI	NO	YES	NO	YES	NO	YES	MONO	NICAM	2 CARR.	FLD	LED	1HR	2HRS
D701	X		O	X															
D702	X		X	O															
D703					X	O													
D704							X	O											
D705									O	X									
D706											X	O							
D707													X	O	O				
D708													X	X	O				
D709																		X	O
D710																X	O		

THE OPTION TABLE OF THE 2nd MASKED MICOM FOR K484P/K884P MODELS

OPTION / DIODE	BROADCASTING SYSTEM				A/V JACK		PDC/A. SET		SVC MODE		V/PLUS		HI-FI			DISPLAY		OFFSET TIME	
		I		2)I/I	1PERI(PHONO)	2PERI	NO	YES	NO	YES	NO	YES	MONO	NICAM		FLD	LED	1HR	
D701		*		*															
D702		X		O															
D703					X	O													
D704							X	O											
D705									O	X									
D706											*	*							
D707													X	O					
D708													*	*					
D709																		*	
D710																X	O		

NOTE)
A. 1)I/I : FOR SOUTH AFRICA MODELS
B. 2)I/I : FOR SOUTHERN IRELAND MODELS
C. * : Don't care

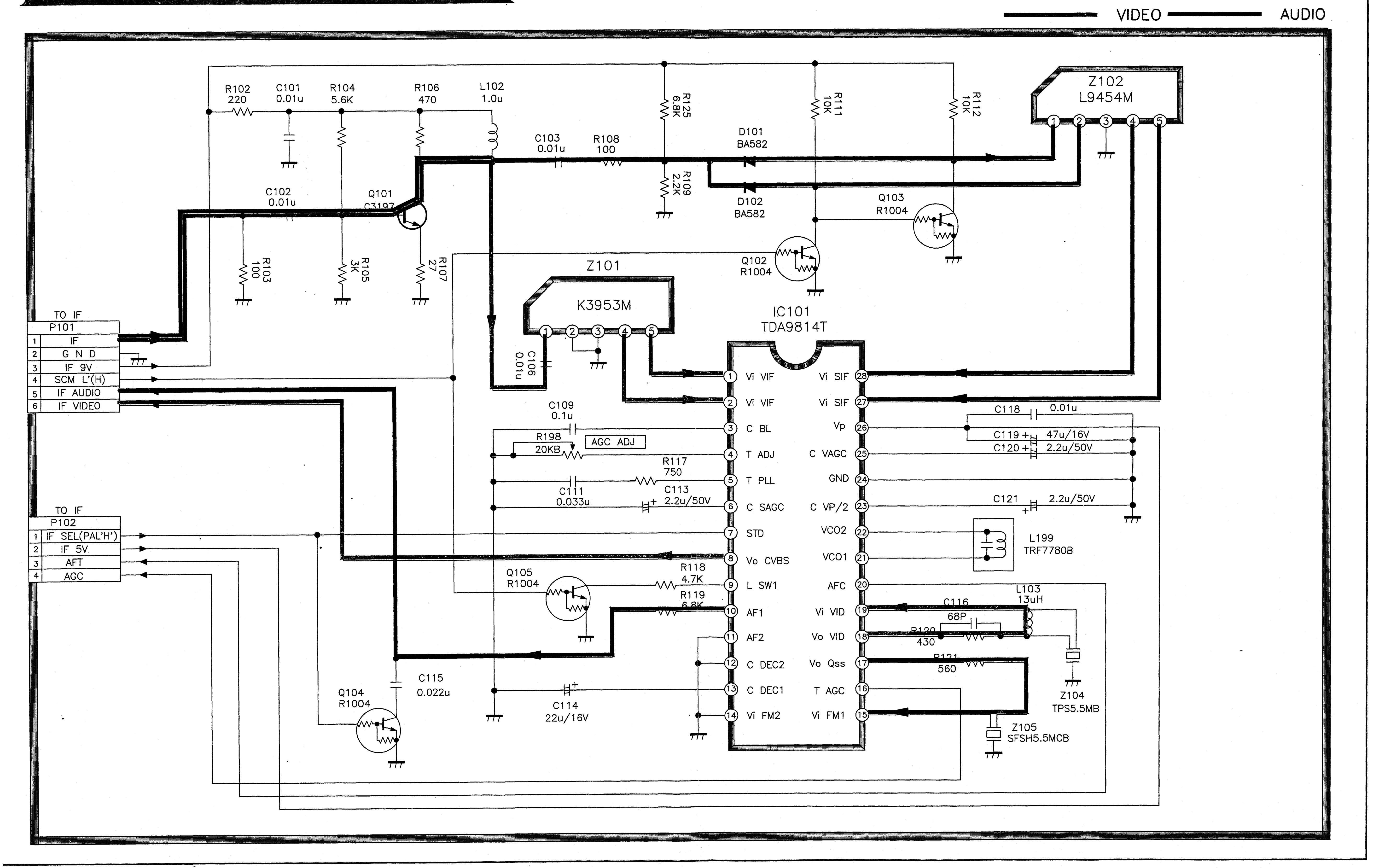
9-6. A/V SW CIRCUIT DIAGRAM


REC VIDEO
REC AUDIO
PB VIDEO
PB AUDIO
Q604 *C3198Y
R612 *150
R613 *150
R610 75
TO VIDEO/AUDIO
VIDEO IN
VIDEO OUT
AUDIO IN
AUDIO OUT
PDC V.IN
IF AUDIO OUT
IF VIDEO OUT
TO IF
AUDIO OUT
VIDEO OUT
IF AUDIO IN
IF VIDEO IN
PDC V.OUT
C612 *0.022u
C622
R611 *75
C601 *47u/16V
C609 *0.01u
D612 *UZ5.6BM
D613 *UZ5.6BM
C607
C623 0.022u
C620 470P
C625 *4.7U/50V
D616 UZ5.6BM
D617 UZ5.6BM
C621 *470P
C608 *4.7u/50V
L603
L604 *2.2u
D620 *UZ5.6BM
D621 *UZ5.6BM
R602 *10K
Q601 *R1002
R622 *27K
D604 *UZ13BL
D605 *UZ13BL
R606 *9.1K
R605 *9.1K
D618 *UZ5.6BM
D619 *UZ5.6BM
C619 *470P
* JK602
C+ DECODER(BLUE)
V.IN
V.OUT
A.IN
A.OUT
JK601
TV AUX(BLACK)
D606 UZ5.6BM
D607 UZ5.6BM
D608 UZ5.6BM
D609 UZ5.6BM
D602 UZ13BL
D603 UZ13BL
R604 10K
R603 10K
D614 UZ5.6BM
D615 UZ5.6BM
*JK603
VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
IC601
*BH7634AS
CLAMP
DRIVER
BUFFER
6dB
VSW1
VSW2
VSW3
ASW1
ASW2
ASW3
A
B
C
MUTE
I²C-BUS CONTROL
AUXCTL1
FOR SW
AUXCTL2
VCC
6.0V REG
CURRENT LIMITER
TO POWER
EVER 9V
GND
EVER 5V
EVER 12.4V
R621 *100
C613 *0.022u
C614 *0.022u
R620 *100
C615 *0.022u
C604 *4.7u/50V
C605 *4.7u/50V
C606 *4.7u/50V
R623 1K
R608 *75
R607 75
Q602 KSR1004
Q603 KSR2001
D610 *UZ5.6BM
D611 *UZ5.6BM
D601 1N4148
L601
TO SYSCON
CANAL+ (L)
A/V DATA
A/V CLK
TV CONTROL

LOC \ SYS	1PERI	2PERI
C607	10uH	4.7u/50V
C622	470u/10V	DELETE
L603	10uH	22uH
L601	DELETE	2.2uH

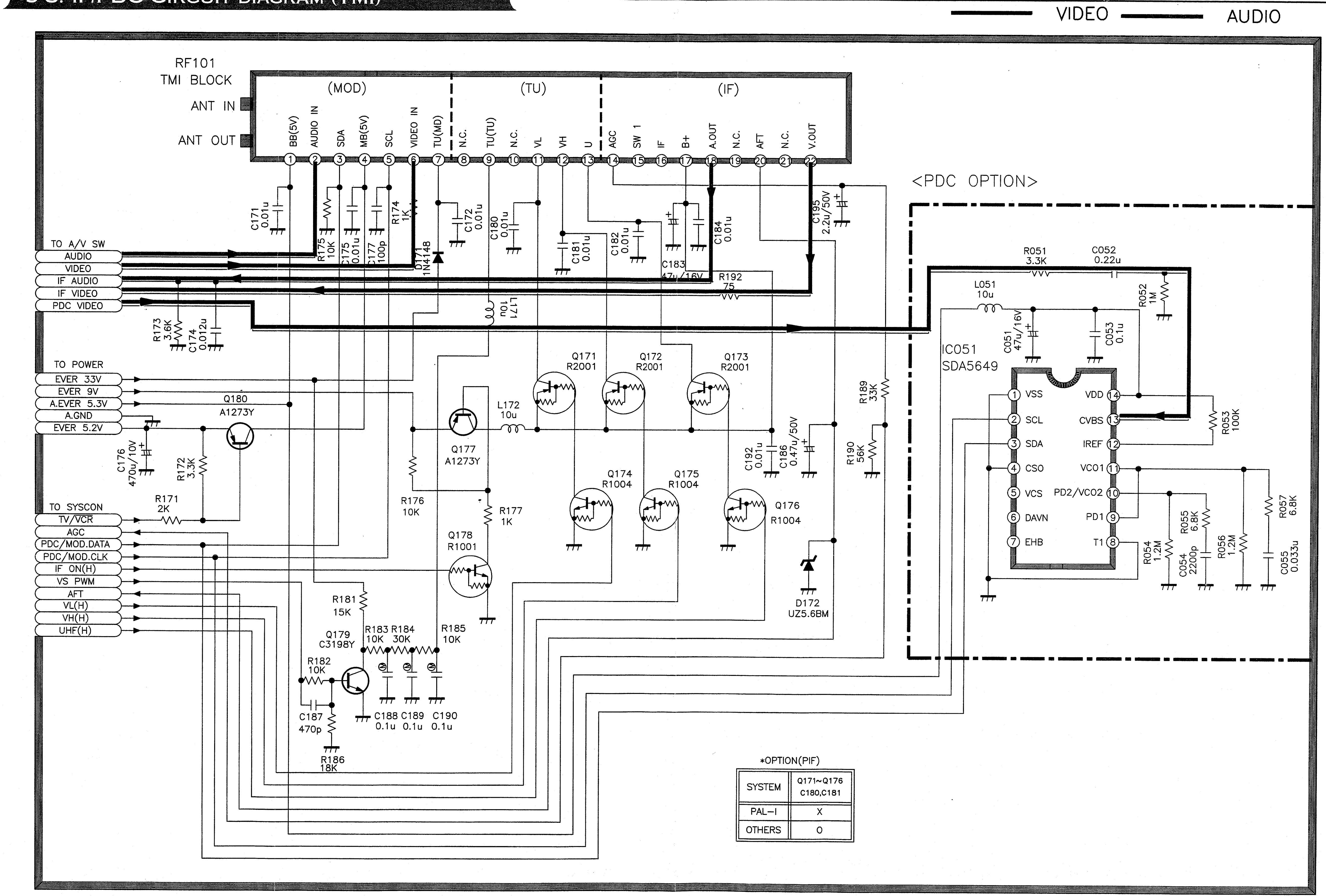
* The components marked with "*" are the 2 peri option, and the dashed line is the signal flow line of 1 prei case.

9-7. IF MODULE CIRCUIT DIAGRAM



VIDEO
AUDIO
R102
220
C101
0.01u
R104
5.6K
R106
470
L102
1.0u
R125
6.8K
R111
10K
R112
10K
Z102
L9454M
C103
0.01u
R108
100
D101
BA582
R109
2.2K
D102
BA582
C102
0.01u
Q101
C3197
Q103
R1004
Q102
R1004
R103
100
R105
3K
R107
27
Z101
K3953M
IC101
TDA9814T
C106
0.01u
TO IF
P101
1 IF
2 G N D
3 IF 9V
4 SCM L'(H)
5 IF AUDIO
6 IF VIDEO
C109
0.1u
R198
20KB
AGC ADJ
R117
750
C111
0.033u
C113
2.2u/50V
TO IF
P102
1 IF SEL(PAL'H')
2 IF 5V
3 AFT
4 AGC
Q105
R1004
R118
4.7K
R119
6.8K
Q104
R1004
C115
0.022u
C114
22u/16V
1 Vi VIF
2 Vi VIF
3 C BL
4 T ADJ
5 T PLL
6 C SAGC
7 STD
8 Vo CVBS
9 L SW1
10 AF1
11 AF2
12 C DEC2
13 C DEC1
14 Vi FM2
28 Vi SIF
27 Vi SIF
26 Vp
25 C VAGC
24 GND
23 C VP/2
22 VCO2
21 VCO1
20 AFC
19 Vi VID
18 Vo VID
17 Vo Qss
16 T AGC
15 Vi FM1
C118
0.01u
C119
47u/16V
C120
2.2u/50V
C121
2.2u/50V
L199
TRF7780B
L103
13uH
C116
68P
R120
430
R121
560
Z104
TPS5.5MB
Z105
SFSH5.5MCB

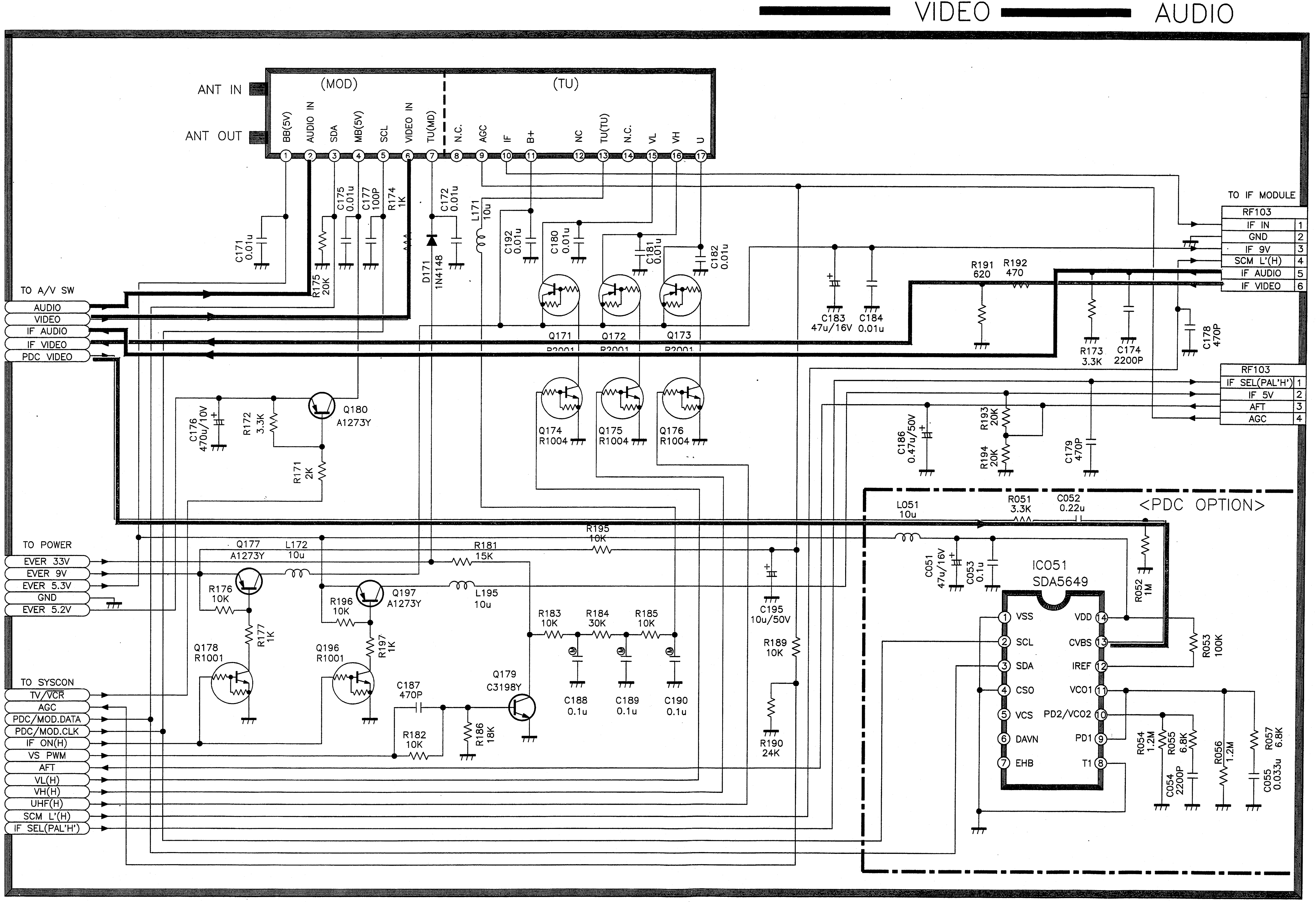
9-8. IF/PDC CIRCUIT DIAGRAM (TMI)


VIDEO
AUDIO
RF101
TMI BLOCK
ANT IN
ANT OUT
(MOD)
(TU)
(IF)
BB(5V)
AUDIO IN
SDA
MB(5V)
SCL
VIDEO IN
TU(MD)
N.C.
TU(TU)
N.C.
VL
VH
U
AGC
SW 1
IF
B+
A.OUT
N.C.
AFT
N.C.
V.OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
C171 0.01u
R175 10K
C175 0.01u
C177 100p
R174 1K
D171 1N4148
C172 0.01u
C180 0.01u
C181 0.01u
C182 0.01u
C183 47u/16V
C184 0.01u
C195 2.2u/50V
R192 75
L171 10u
<PDC OPTION>
TO A/V SW
AUDIO
VIDEO
IF AUDIO
IF VIDEO
PDC VIDEO
R173 3.6K
C174 0.012u
TO POWER
EVER 33V
EVER 9V
A.EVER 5.3V
A.GND
EVER 5.2V
Q180 A1273Y
C176 470u/10V
R172 3.3K
TO SYSCON
TV/VCR
AGC
PDC/MOD.DATA
PDC/MOD.CLK
IF ON(H)
VS PWM
AFT
VL(H)
VH(H)
UHF(H)
R171 2K
Q177 A1273Y
L172 10u
R176 10K
R177 1K
Q178 R1001
Q171 R2001
Q172 R2001
Q173 R2001
Q174 R1004
Q175 R1004
Q176 R1004
C192 0.01u
C186 0.47u/50V
R189 33K
R190 56K
D172 UZ5.6BM
R181 15K
Q179 C3198Y
R183 10K
R184 30K
R185 10K
R182 10K
C187 470p
R186 18K
C188 0.1u
C189 0.1u
C190 0.1u
R051 3.3K
C052 0.22u
L051 10u
R052 1M
C051 47u/16V
C053 0.1u
IC051
SDA5649
1 VSS
2 SCL
3 SDA
4 CSO
5 VCS
6 DAVN
7 EHB
VDD 14
CVBS 13
IREF 12
VCO1 11
PD2/VCO2 10
PD1 9
T1 8
R053 100K
R054 1.2M
C054 2200p
R055 6.8K
R056 1.2M
R057 6.8K
C055 0.033u

*OPTION(PIF)

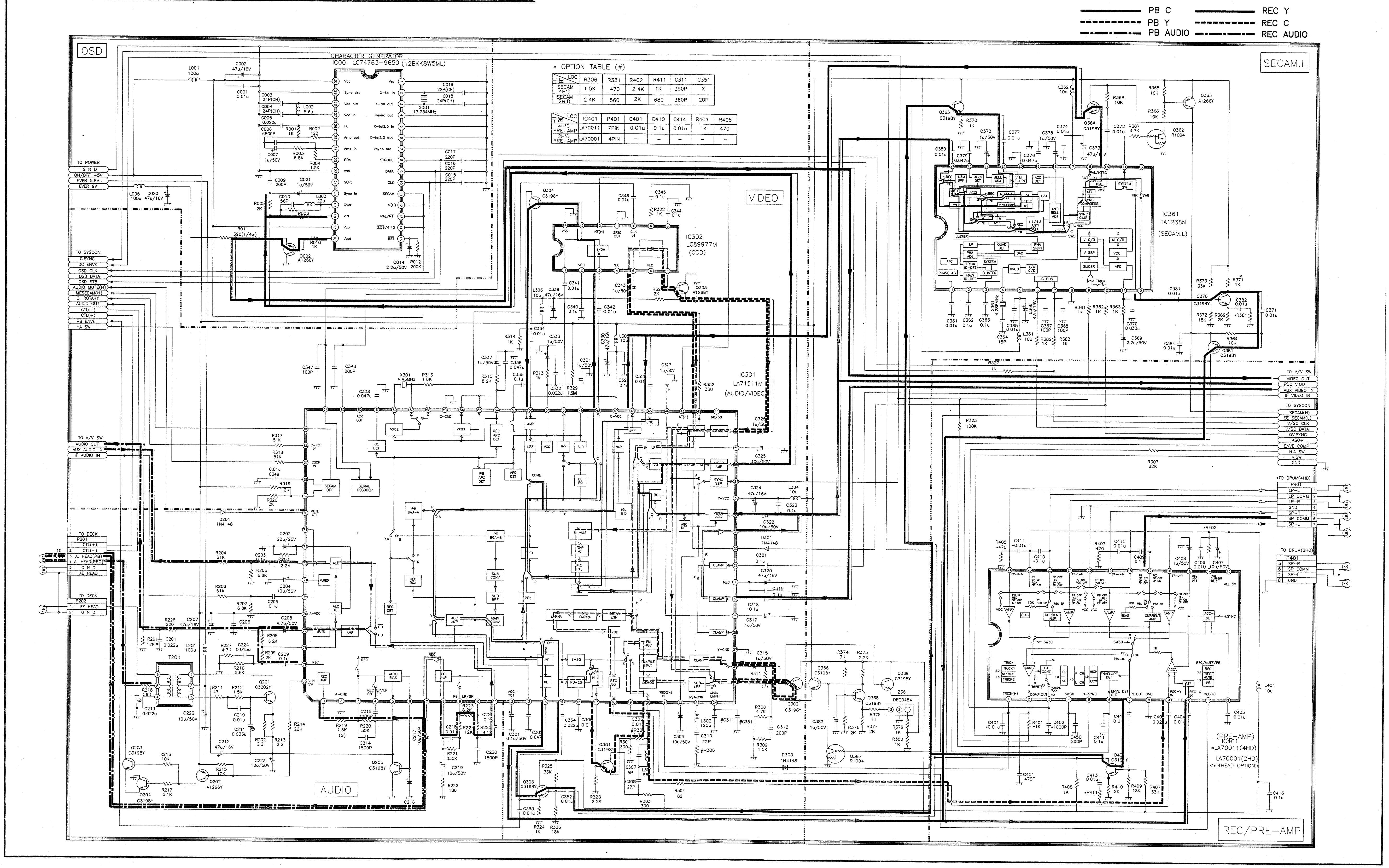
SYSTEM	Q171~Q176 C180,C181
PAL-I	X
OTHERS	O

9-9. IF/PDC CIRCUIT DIAGRAM (TM)



VIDEO
AUDIO
ANT IN
ANT OUT
(MOD)
(TU)
BB(5V)
AUDIO IN
SDA
MB(5V)
SCL
VIDEO IN
TU(MD)
N.C.
AGC
IF
B+
NC
TU(TU)
N.C.
VL
VH
U
C171 0.01u
C175 0.01u
C177 100P
R174 1K
C172 0.01u
L171 10u
D171 1N4148
R175 20K
C192 0.01u
C180 0.01u
C181 0.01u
C182 0.01u
Q171 R2001
Q172 R2001
Q173 R2001
Q174 R1004
Q175 R1004
Q176 R1004
C183 47u/16V
C184 0.01u
R191 620
R192 470
R173 3.3K
C174 2200P
C178 470P
TO IF MODULE
RF103
IF IN 1
GND 2
IF 9V 3
SCM L'(H) 4
IF AUDIO 5
IF VIDEO 6
RF103
IF SEL(PAL'H') 1
IF 5V 2
AFT 3
AGC 4
TO A/V SW
AUDIO
VIDEO
IF AUDIO
IF VIDEO
PDC VIDEO
C176 470u/10V
R172 3.3K
Q180 A1273Y
R171 2K
C186 0.47u/50V
R193 20K
R194 20K
C179 470P
<PDC OPTION>
L051 10u
R051 3.3K
C052 0.22u
C051 47u/16V
C053 0.1u
IC051 SDA5649
R052 1M
VSS 1
SCL 2
SDA 3
CSO 4
VCS 5
DAVN 6
EHB 7
VDD 14
CVBS 13
IREF 12
VCO1 11
PD2/VCO2 10
PD1 9
T1 8
R053 100K
R054 1.2M
R055 6.8K
C054 2200P
R056 1.2M
R057 6.8K
C055 0.033u
TO POWER
EVER 33V
EVER 9V
EVER 5.3V
GND
EVER 5.2V
Q177 A1273Y
L172 10u
R181 15K
R195 10K
R176 10K
Q197 A1273Y
L195 10u
R196 10K
R177 1K
R197 1K
Q178 R1001
Q196 R1001
R183 10K
R184 30K
R185 10K
C195 10u/50V
R189 10K
R190 24K
C188 0.1u
C189 0.1u
C190 0.1u
Q179 C3198Y
C187 470P
R182 10K
R186 18K
TO SYSCON
TV/VCR
AGC
PDC/MOD.DATA
PDC/MOD.CLK
IF ON(H)
VS PWM
AFT
VL(H)
VH(H)
UHF(H)
SCM L'(H)
IF SEL(PAL'H')

9-10. VIDEO/AUDIO CIRCUIT DIAGRAM (SECAM)


PB C
PB Y
PB AUDIO
REC Y
REC C
REC AUDIO
OSD
CHARACTER GENERATOR
IC001 LC74763-9650 (12BKK8W5ML)
TO POWER
GND
ON/OFF +5V
EVER 5.8V
EVER 9V
TO SYSCON
C.SYNC
DC ENVE
OSD CLK
OSD DATA
OSD STB
AUDIO MUTE(H)
MESECAM(H)
C. ROTARY
AUDIO OUT
CTL(-)
CTL(+)
PB ENVE
HA SW
VIDEO
IC302
LC89977M
(CCD)
IC301
LA71511M
(AUDIO/VIDEO)
SECAM.L
IC361
TA1238N
(SECAM.L)
TO A/V SW
VIDEO OUT
PDC VIDEO IN
AUX VIDEO IN
IF VIDEO IN
TO SYSCON
SECAM(H)
EE SECAM(L)
V/SC CLK
V/SC DATA
QV.SYNC
ASO+
ENVE COMP
H.A SW
V.SW
GND
TO DRUM(4HD)
P401
LP-L
LP COMM
LP-R
GND
SP-R
SP COMM
SP-L
TO DRUM(2HD)
P401
SP-R
SP COMM
SP-L
GND
TO A/V SW
AUDIO OUT
AUX AUDIO IN
IF AUDIO IN
TO DECK
P201
CTL(+)
CTL(-)
A. HEAD(PB)
A. HEAD(REC)
GND
AE HEAD
TO DECK
P202
FE HEAD
GND
AUDIO
(PRE-AMP)
IC401
*LA70011(4HD)
LA70001(2HD)
<*:4HEAD OPTION>
REC/PRE-AMP

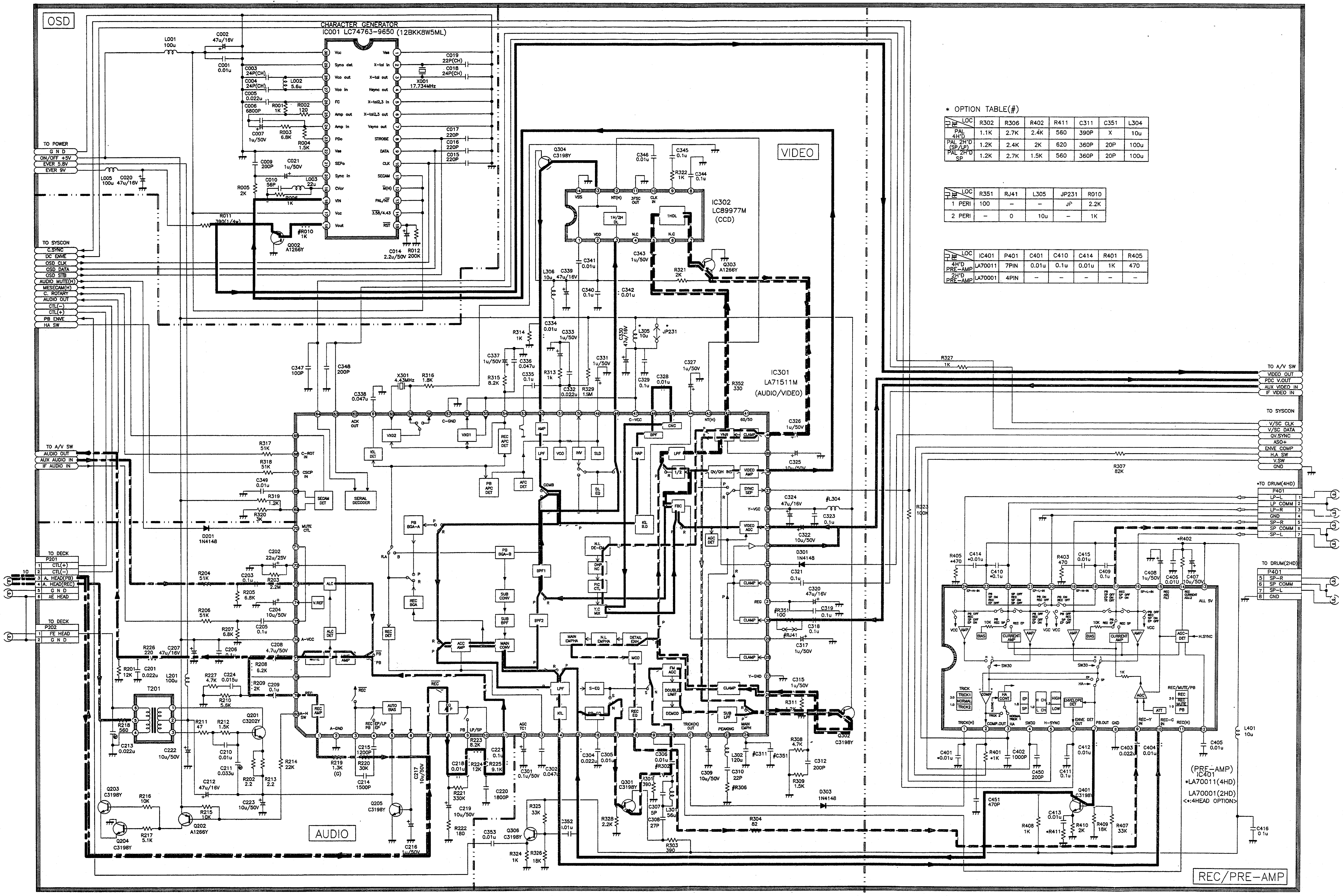
* OPTION TABLE (#)

구분 \ LOC	R306	R381	R402	R411	C311	C351
SECAM 4H'D	1 5K	470	2 4K	1K	390P	X
SECAM 2H'D	2.4K	560	2K	680	360P	20P

구분 \ LOC	IC401	P401	C401	C410	C414	R401	R405
4H'D PRE-AMP	LA70011	7PIN	0.01u	0 1u	0 01u	1K	470
2H'D PRE-AMP	LA70001	4PIN	–	–	–	–	–

9-11. VIDEO/AUDIO CIRCUIT DIAGRAM

——— PB C ——— REC C
- - - - PB Y - - - - REC Y
—·— PB AUDIO —·— REC AUDIO



OSD
CHARACTER GENERATOR
IC001 LC74763-9650 (12BKK8W5ML)
X001 17.734MHz
Q002 A1266Y
TO POWER
G N D
ON/OFF +5V
EVER 5.8V
EVER 9V
TO SYSCON
C.SYNC
DC ENVE
OSD CLK
OSD DATA
OSD STB
AUDIO MUTE(H)
MESECAM(H)
C. ROTARY
AUDIO OUT
CTL(–)
CTL(+)
PB ENVE
HA SW
VIDEO
IC302 LC89977M (CCD)
Q304 C3198Y
Q303 A1266Y
IC301 LA71511M (AUDIO/VIDEO)
X301 4.43MHz
TO A/V SW
AUDIO OUT
AUX AUDIO IN
IF AUDIO IN
TO DECK
P201
CTL(+)
CTL(–)
A. HEAD(PB)
A. HEAD(REC)
G N D
AE HEAD
TO DECK
P202
FE HEAD
G N D
T201
Q201 C3202Y
Q202 A1266Y
Q203 C3198Y
Q204 C3198Y
Q205 C3198Y
Q306 C3198Y
Q301 C3198Y
Q302 C3198Y
AUDIO
TO A/V SW
VIDEO OUT
PDC V.OUT
AUX VIDEO IN
IF VIDEO IN
TO SYSCON
V/SC CLK
V/SC DATA
QV.SYNC
ASO+
ENVE COMP
H.A SW
V.SW
GND
*TO DRUM(4HD)
P401
LP–L
LP COMM
LP–R
GND
SP–R
SP COMM
SP–L
TO DRUM(2HD)
P401
SP–R
SP COMM
SP–L
GND
(PRE–AMP)
IC401
*LA70011(4HD)
LA70001(2HD)
<*:4HEAD OPTION>
Q401 C3198Y
REC/PRE–AMP

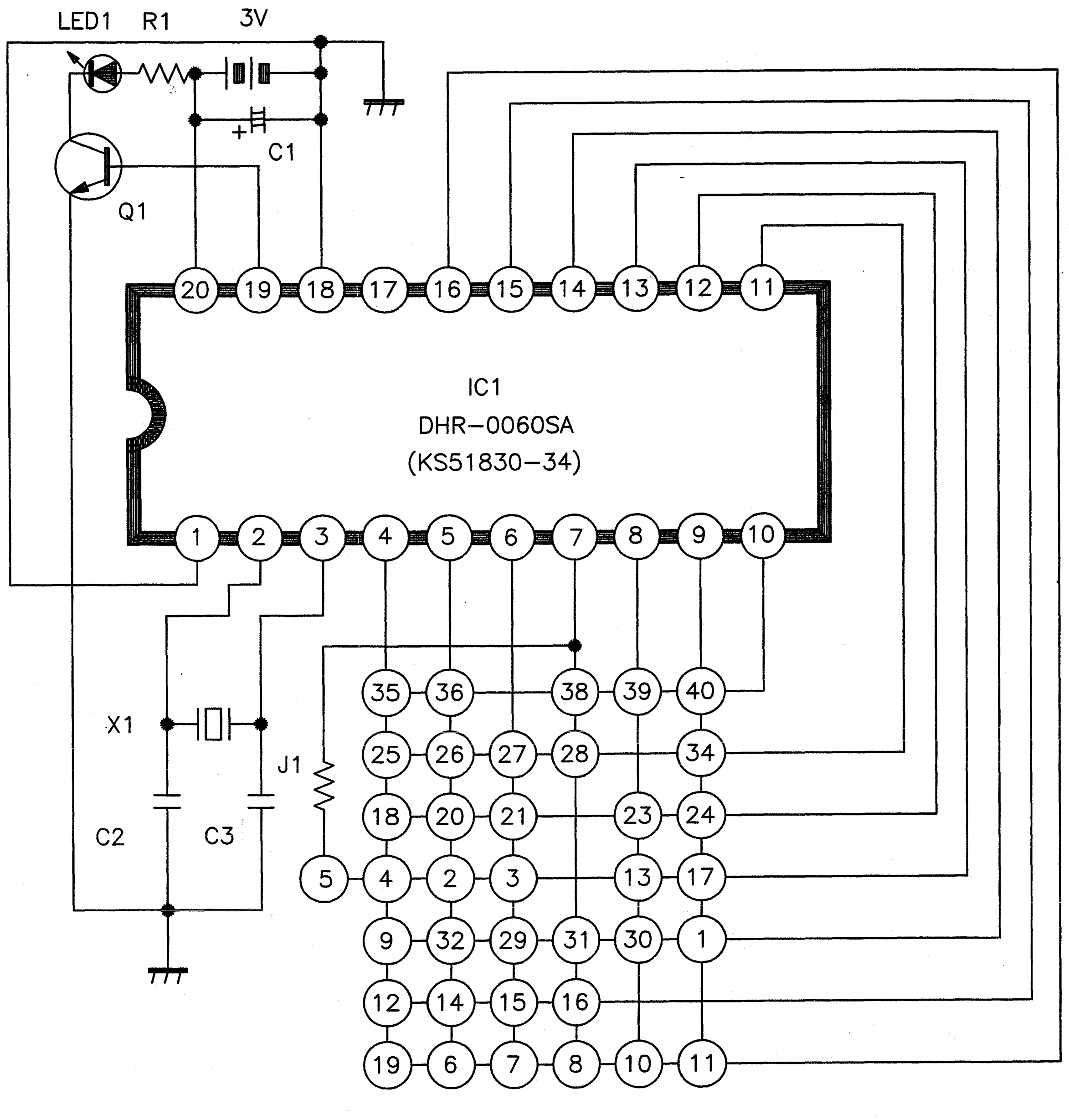
* OPTION TABLE(#)

구분 \ LOC	R302	R306	R402	R411	C311	C351	L304
PAL 4H'D	1.1K	2.7K	2.4K	560	390P	X	10u
PAL 2H'D (SP/LP)	1.2K	2.4K	2K	620	360P	20P	100u
PAL 2H'D SP	1.2K	2.7K	1.5K	560	360P	20P	100u

구분 \ LOC	R351	RJ41	L305	JP231	R010
1 PERI	100	–	–	JP	2.2K
2 PERI	–	0	10u	–	1K

구분 \ LOC	IC401	P401	C401	C410	C414	R401	R405
4H'D PRE–AMP	LA70011	7PIN	0.01u	0.1u	0.01u	1K	470
2H'D PRE–AMP	LA70001	4PIN	–	–	–	–	–

9-12. REMOCON CIRCUIT DIAGRAM


LED1
R1
3V
C1
Q1
X1
J1
C2
C3
IC1
DHR-0060SA
(KS51830-34)
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
35 36 38 39 40
25 26 27 28 34
18 20 21 23 24
5 4 2 3 13 17
9 32 29 31 30 1
12 14 15 16
19 6 7 8 10 11

KEY DATA

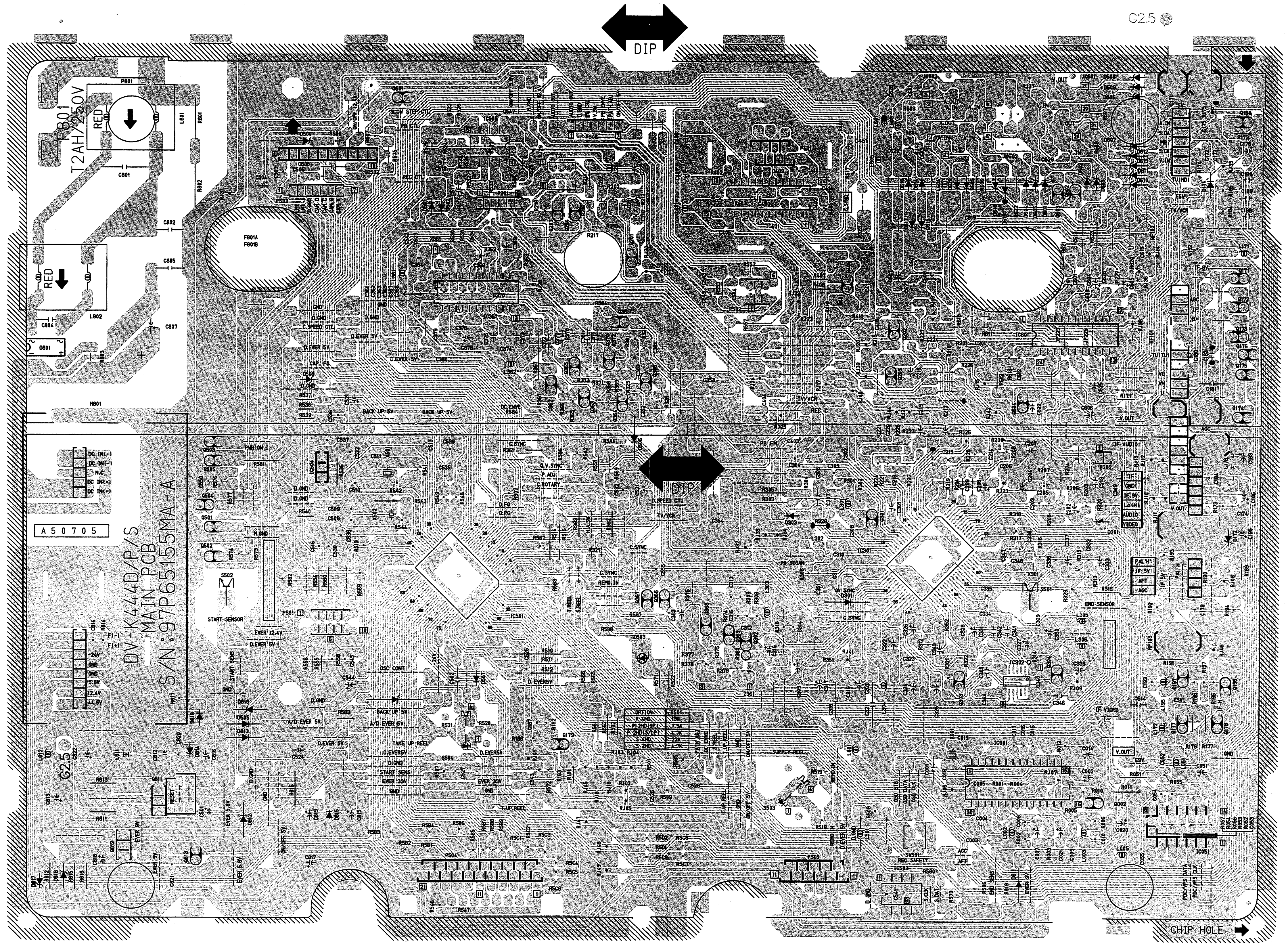
NO.	KEY NAME	CUSTOM CODE	DATA CODE	NO.	KEY NAME	CUSTOM CODE	DATA CODE
K01	POWER(STAND BY)	15 H	15 H	K20	→	15 H	35 H
K02	←	15 H	31 H	K21	T.R(TAPE REMAIN)	15 H	1C H
K03	PR–	15 H	18 H	K23	◕/⊙⊙ (CLK/CNT)	15 H	1D H
K04	PR+	15 H	17 H	K24	TIME(CNT RESET)	15 H	37 H
K05	VCR PLUS/SHOW VIEW	15 H	39 H	K25	● (REC)	15 H	12 H
K06	1	15 H	01 H	K26	SP / LP	15 H	1B H
K07	2	15 H	02 H	K27	AV(INPUT)	15 H	36 H
K08	3	15 H	03 H	K28	EJECT	15 H	21 H
K09	OK	15 H	29 H	K29	▶ (PLAY)	15 H	0E H
K10	4	15 H	04 H	K30	《 (REW)	15 H	10 H
K11	5	15 H	05 H	K31	》 (FF)	15 H	0F H
K12	6	15 H	06 H	K32	■ (STOP)	15 H	0D H
K13	MENU	15 H	22 H	K34	PAL/SECAM	15 H	1F H
K14	7	15 H	07 H	K35	▮▶ (SLOW)	15 H	13 H
K15	8	15 H	08 H	K36	|| (PAUSE)	15 H	11 H
K16	9	15 H	09 H	K38	INDEX –	15 H	3F H
K17	TV / VCR	15 H	16 H	K39	→0←(GOTO 0)	15 H	0A H
K18	A.SEL	15 H	1A H	K40	INDEX +	15 H	33 H
K19	0	15 H	00 H				

IC	DHR-0060SA(KS51830-34)
X1	ZTB-455ET4,KBR-455BK85L
Q1	2SD1781KY,KTC3265Y,KSC3265
LED1	HI-I520A
R1	1/10W 2.0 Ohm
J1	1/10W 0.0 Ohm
C1	10V/47uF
C2,C3	50V/100pF

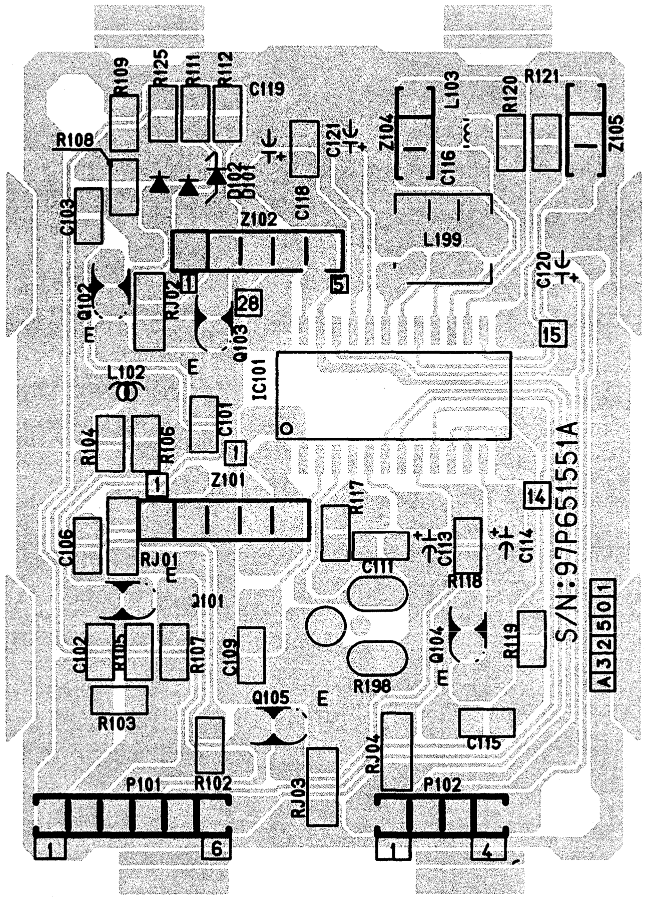
* J1:VCR PLUS OPTION

ON : VCR PLUS OPERATE
OFF : VCR PLUS NOT OPERATE

10-1. PCB MAIN

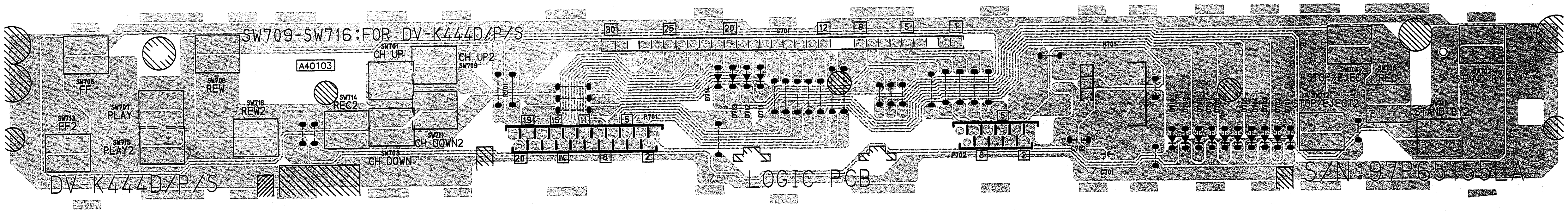

DIP
G2.5
F801
T2AH/250V
RED
RED
A50705
DV-K444D/P/S
MAIN PCB
S/N:97P65155MA-A
DIP
G2.5
CHIP HOLE

10-2. PCB IF MODULE

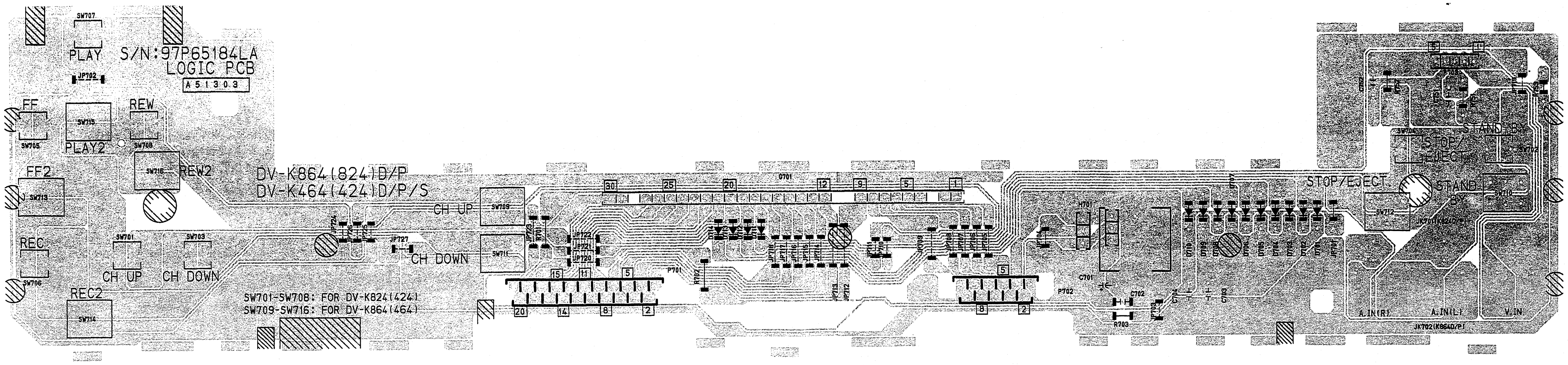

R109
R125
R111
R112
C119
R108
C103
D102
D101
C121
C118
Z102
Z104
L103
C116
R120
R121
Z105
L199
C120
Q102
RJ02
11
28
5
15
E
Q103
IC101
L102
R104
R106
C101
1
Z101
R117
14
C113
C114
S/N:97P651551A
C106
RJ01
C111
R118
Q101
Q104
R119
A32501
C102
R105
R107
C109
R198
Q105
R103
RJ04
C115
P101
R102
RJ03
P102
6
4

10-3. PCB LOGIC

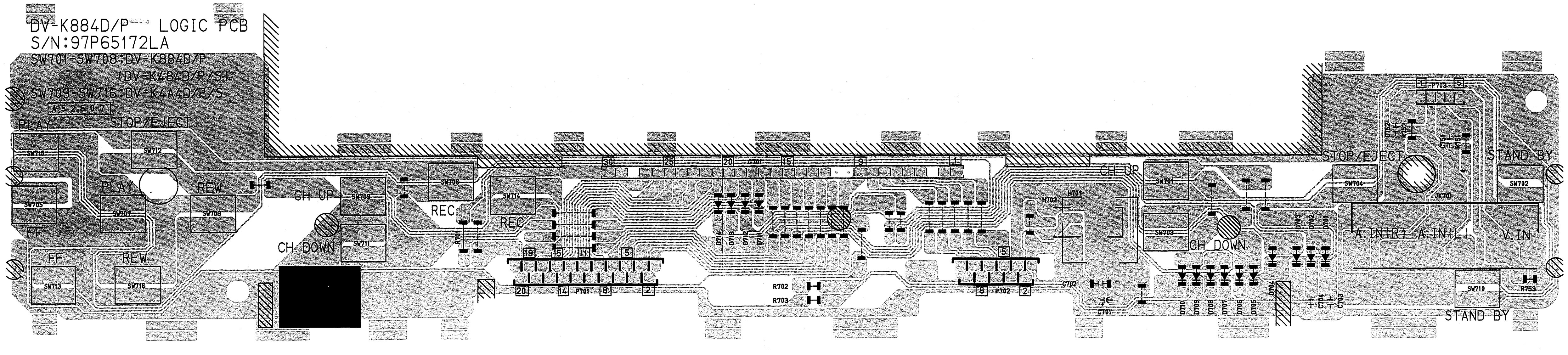
DV-K24* / K44* SERIES (DV-K20* / K40* SERIES)


SW709-SW716:FOR DV-K444D/P/S
A40103
SW705
FF
SW713
FF2
SW707
PLAY
SW715
PLAY2
SW708
REW
SW716
REW2
SW714
REC2
SW701
CH UP
CH UP2
SW709
SW711
CH DOWN2
SW703
CH DOWN
DV-K444D/P/S
R701
30
25
20
12
9
5
1
G701
19
15
11
5
P701
20
14
8
2
D714
D713
D712
D711
LOGIC PCB
5
P702
8
2
H701
C702
C701
D710
D709
D708
D707
D706
D705
D704
D703
D702
D701
SW704
STOP/EJECT
SW706
REC
SW712
STOP/EJECT2
SW702
STAND BY
SW710
STAND BY2
S/N:97P65155LA

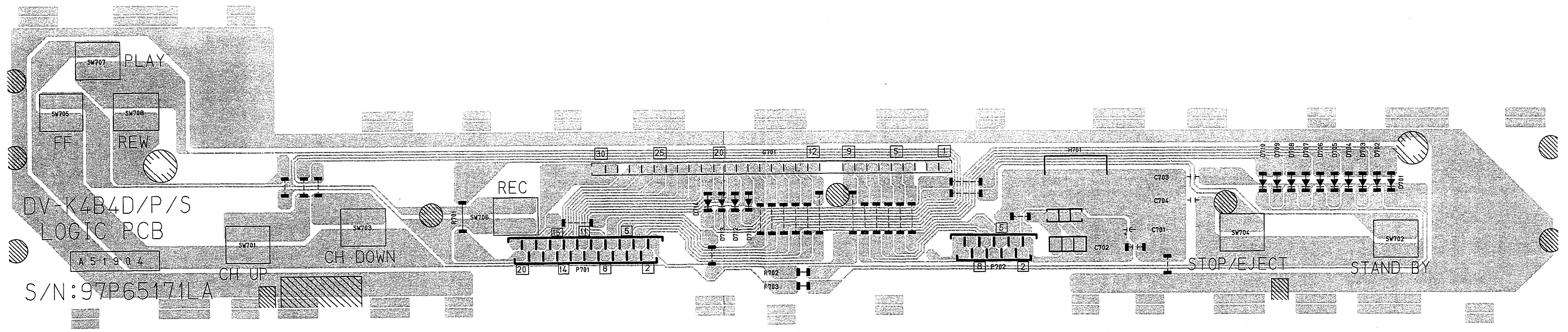
DV-K26* / K46* SERIES (DV-K22* / K42* SERIES)


SW707
PLAY
S/N:97P65184LA
LOGIC PCB
A51303
JP702
FF
SW705
SW715
PLAY2
REW
SW708
FF2
SW713
SW716
REW2
DV-K864(824)D/P
DV-K464(424)D/P/S
CH UP
SW709
REC
SW706
SW701
CH UP
SW703
CH DOWN
JP724
JP726
JP725
JP727
CH DOWN
SW711
JP723
R701
JP722
JP721
JP720
REC2
SW714
SW701-SW708: FOR DV-K824(424)
SW709-SW716: FOR DV-K864(464)
30
25
20
G701
12
9
5
1
15
11
5
P701
R702
20
14
8
2
D714
D713
D712
D711
JP718
JP717
JP716
JP715
JP714
JP713
JP712
JP711
JP710
JP709
JP708
JP707
JP706
JP705
5
P702
8
2
JP704
H701
C701
C702
R703
JP703
C704
C703
D710
D709
D708
D706
D705
D704
D703
D702
D701
JP701
STOP/EJECT
SW712
STAND BY
SW710
JK701(K824D/P)
STAND BY
SW704
STOP/EJECT
SW702
5
1
P703
C752
R752
JK751
R751
JP719
R753
A.IN(R)
A.IN(L)
V.IN
JK702(K864D/P)

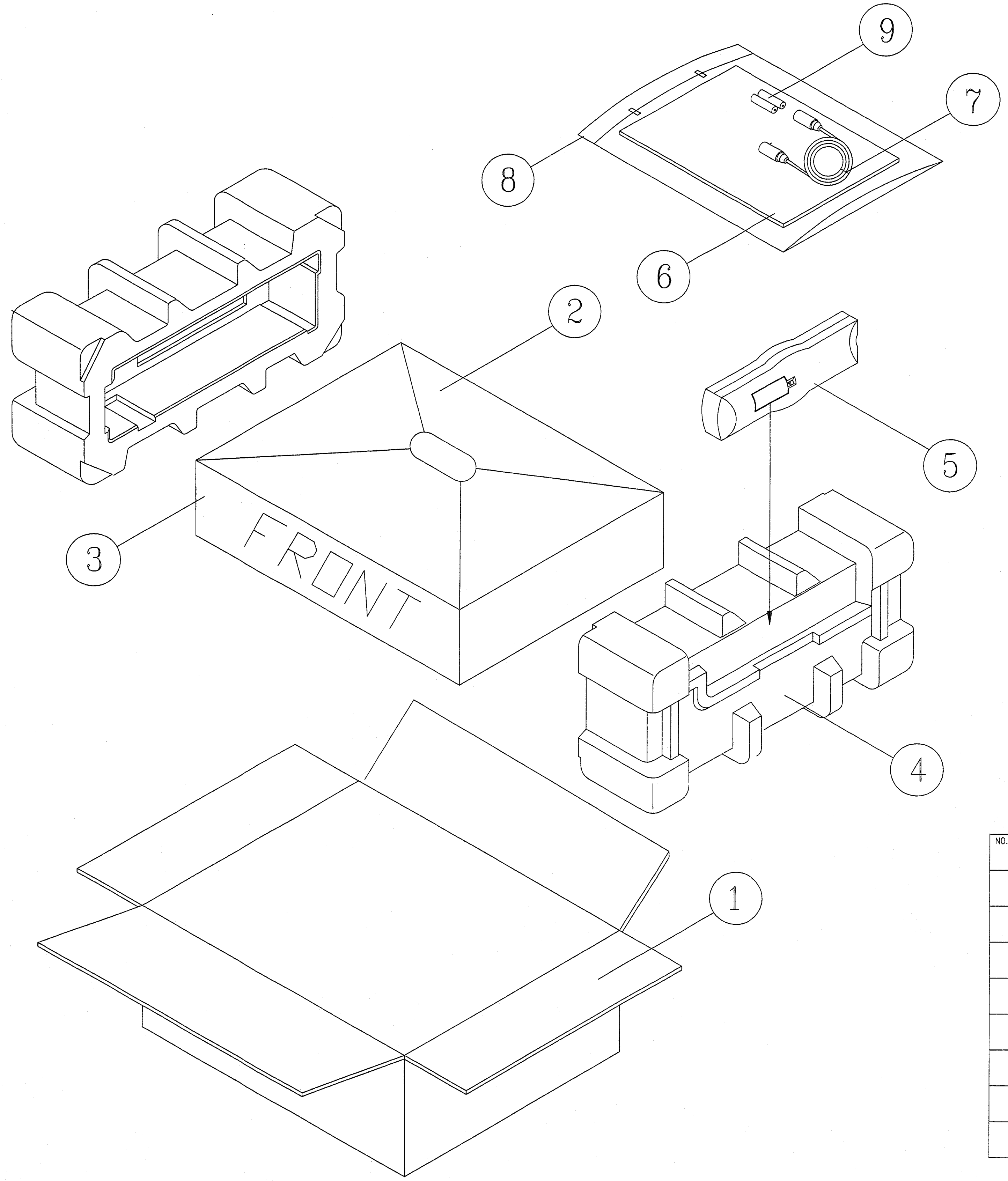
DV-K28* / K48* SERIES (DV-K2A* / K4A* SERIES)


DV-K884D/P LOGIC PCB
S/N:97P65172LA
SW701-SW708:DV-K884D/P
(DV-K484D/P/S)
SW709-SW716:DV-K4A4D/P/S
A52607
PLAY
STOP/EJECT
SW715
SW712
SW705
PLAY
SW707
REW
SW708
FF
CH UP
SW709
SW711
CH DOWN
SW706
REC
SW714
REC
R701
FF
REW
SW713
SW716
30
25
20
G701
15
9
1
19
15
11
5
20
14
P701
8
2
R702
R703
5
8
P702
2
C702
C701
H702
H701
CH UP
SW701
SW703
CH DOWN
D710
D709
D708
D707
D706
D705
D704
D703
D702
D701
C704
C703
STOP/EJECT
SW704
1
P703
5
C752
R752
C751
R751
JK701
STAND BY
SW702
A.IN(R)
A.IN(L)
V.IN
SW710
R753
STAND BY

DV-K2B* / K4B* SERIES

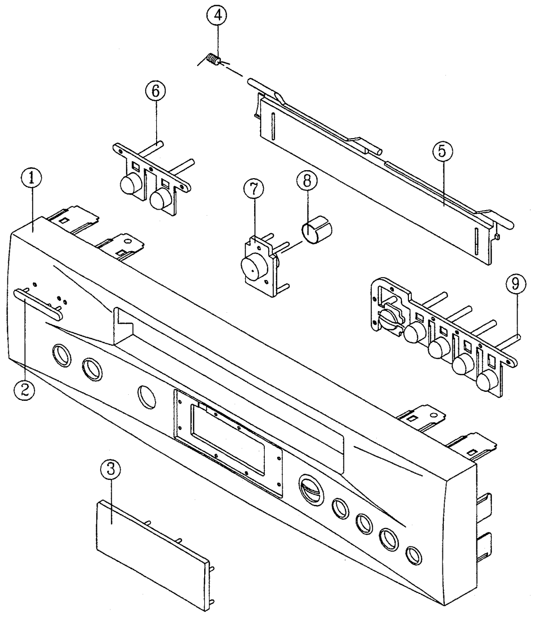

SW707
PLAY
SW705
SW708
FF
REW
DV-K4B4D/P/S
LOGIC PCB
A51904
S/N:97P65171LA
SW701
CH UP
SW703
CH DOWN
REC
R701
SW706
30
25
20
G701
12
9
5
1
15
11
5
20
14
P701
8
2
R702
R703
5
8
P702
2
H701
C703
C704
C701
C702
D710
D709
D708
D707
D706
D705
D704
D703
D702
D701
SW704
STOP/EJECT
SW702
STAND BY

11-1. PACKING ASS'Y



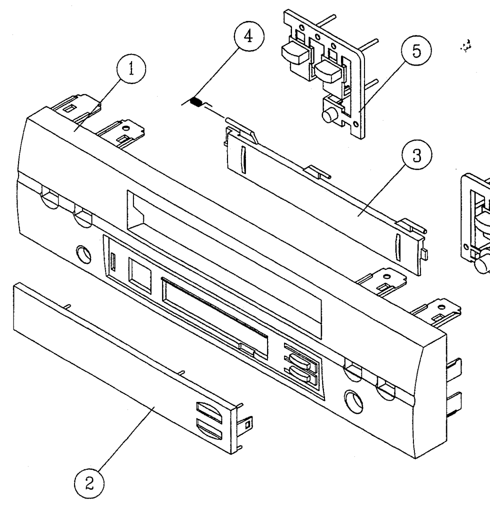
NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
9	BATTERY	486A716200	2	AAA	
8	COVER ACCESSORY	97P0424100	1	LD-PE T0.1	
7	CABLE RF	97P880RS15 97P880RP15	1	SECAM 1.5M PAL 1.5M	
6	MANUAL OWNERS	97P9560000	1	DV-K444D/P/S	
5	REMOCON HANDSET AS	97P1R2GA00	1	VR-F2GA	
4	PAD LEFT/RIGHT	97P4924600	LR 1	E.P.S	
3	POLY BACK FOR SET	97P4803100	1	PE FOAM	
2	SET TOTAL AS	DV-K444D/P/S	1	360x90x310	
1	CARTON BOX	97P5043800	1	A-1,SW-4	

11-2. FRONT PANEL ASSEMBLY



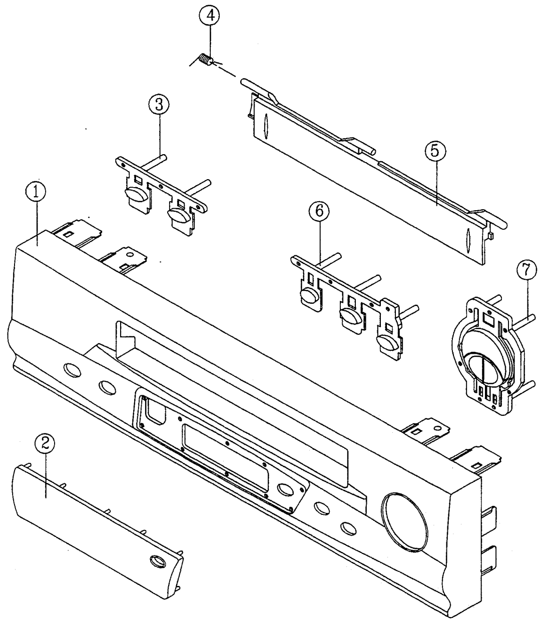
DV-K24*/K44* SERIES(97PD179300)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
9	KNOB FUNCTION	97P1352600	1	ABS MIWON 95107	
8	GUIDE SENSOR	97P2508900	1	SUS304 T0.15	
7	WINDOW SENSOR	97P1620000	1	PMMA	
6	KNOB S/B	97P1352500	1	ABS MIWON 95107	
5	DOOR F/L	97P1819400	1	ABS	
4	SPRING DOOR F/L	97P3038000	1	SWPB 5088N	
3	WINDOW FRONT	97P1619600	1	PMMA	
2	BADGE DAEWOO	97P1502800	1	AL	SILVER
1	PANEL FRONT	97P0316900	1	HI-PS(HB)	



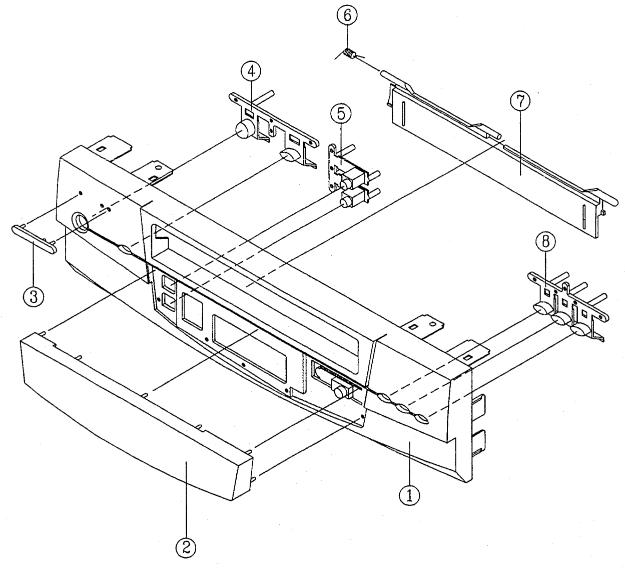
DV-K20*/K40* SERIES(97PD185800)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
6	KNOB-B	97P1352300	1	ABS	
5	KNOB-A	97P1352200	1	ABS	
4	SPRING F/L DOOR	97P3033600	1	SWPB	
3	DOOR F/L	97P1819300	1	ABS	
2	WINDOW FRONT	97P1619500	1	PMMA	
1	PANEL FRONT	97P0316800	1	HI-PS	



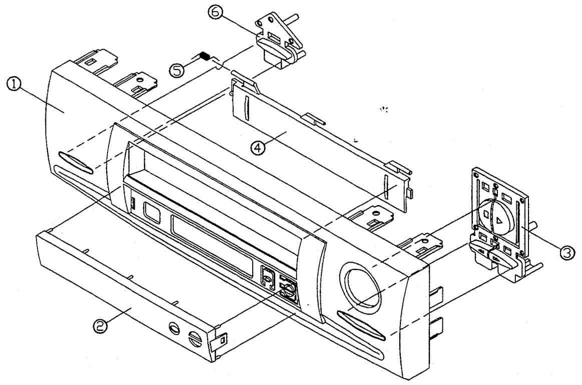
DV-K2B*/K4B* SERIES(97PD189100)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
7	KNOB FUNCTION	97P1353400	1	ABS MIWON 95107	
6	KNOB CH/REC	97P1353300	1	ABS MIWON 95107	
5	DOOR F/L	97P1819600	1	ABS(HB)	
4	SPRING DOOR F/L	97P3033600	1	SUS304	DVR-5088N
3	KNOB S/E	97P1353200	1	ABS MIWON 95107	
2	WINDOW FRONT	97P1619800	1	PMMA,41791	
1	PANEL FRONT	97P0317100	1	HI-PS(HB)	



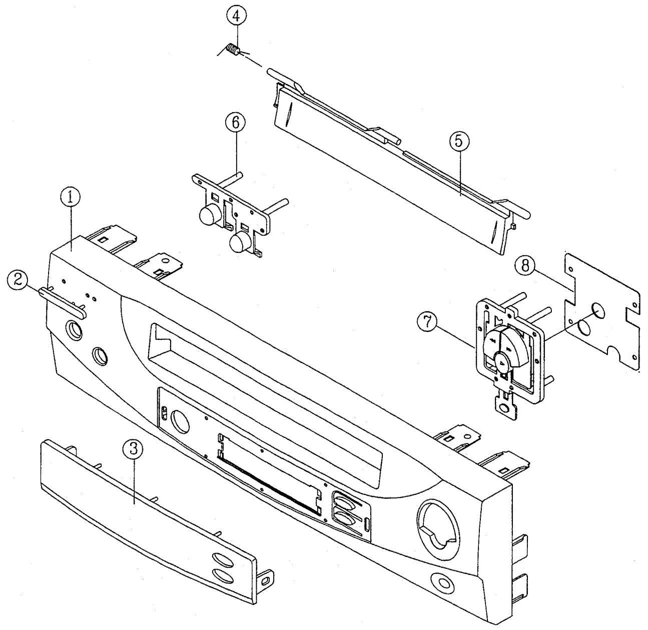
DV-K28*/K48* SERIES(97PD190100)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
8	KNOB FUNCTION	97P1353700	1	ABS	
7	DOOR F/L	97P1819500	1	ABS	
6	SPRING DOOR F/L	97P3033600	1	SWPB 5088N	
5	KNOB CHANNEL	97P1353600	1	ABS	
4	KNOB S/E	97P1353500	1	ABS	
3	BADGE DAEWOO	97P1502800	1	AL	SILVER
2	WINDOW FRONT	97P1619900	1	PMMA	
1	PANEL FRONT	97P0317200	1	HI-PS(HB)	



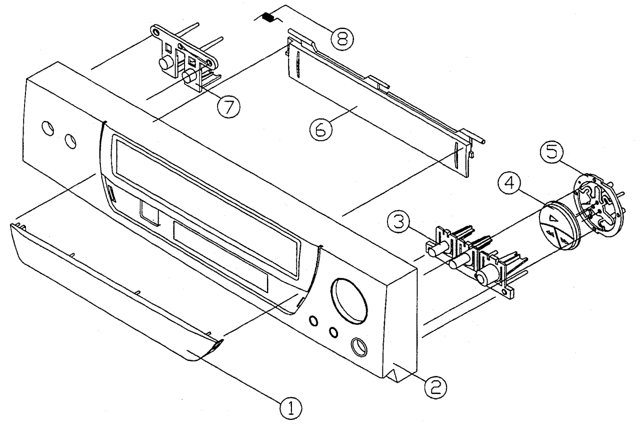
DV-K2A*/K4A* SERIES(97PD189000)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
6	KNOB S/B	97P1352900	1	ABS	
5	SPRING F/L DOOR	97P3038000	1	SWPB 5088	
4	DOOR F/L	97P1820200	1	ABS	
3	KNOB FUNCTION	97P1352800	1	ABS	
2	WINDOW FRONT	97P1619700	1	PMMA	
1	PANEL FRONT	97P0317000	1	HI-PS	



DV-K26*/K46* SERIES(97PD191900)

NO.	PART NAME	PART NO.	QUANTITY	MATERIAL	REMARK
8	PLATE EARTH A	97P0978200	1	PVC T0.15	
7	KNOB FUNCTION	97P1356200	1	ABS	
6	KNOB S/E	97P1356000	1	ABS	
5	DOOR F/L	97P1820300	1	ABS	
4	SPRING DOOR F/L	97P3033600	1	SWPB 5088N	
3	WINDOW FRONT	97P1621200	1	PMMA	
2	BADGE DAEWOO	97P1502800	1	AL	SILVER
1	PANEL FRONT	97P0318000	1	HI-PS(HB)	



DV-K22*/K42* SERIES(97PD192700)

NO.	PART NAME	PART NO.	Q'TITY	MATERIAL	REMARK
8	SPRING F/L DOOR	97P3038000	1	SWPB 5088	
7	KNOB S/EJECT	97P1356600	1	ABS780(95107)	
6	DOOR F/L	97P1820500	1	ABS780	
5	HOLDER KNOB	97P2341600	1	ABS780(95107)	
4	KNOB FUNCTION	97P1356800	1	ABS780(95107)	
3	KNOB CH/REC	97P1356700	1	ABS780(95107)	
2	PANEL FRONT	97P0318200	1	HI-PS(HB)	NO CHANGE CORE
1	WINDOW FRONT	97P1621400	1	PMMA(41791)	

11-3. INSTRUMENT DISASSEMBLY

1. TOP COVER REMOVAL (FIG. 1)

1) Remove five (5) screws holding the top cover.
2) Carefully lift the back of the top cover and slide to the rear to remove.

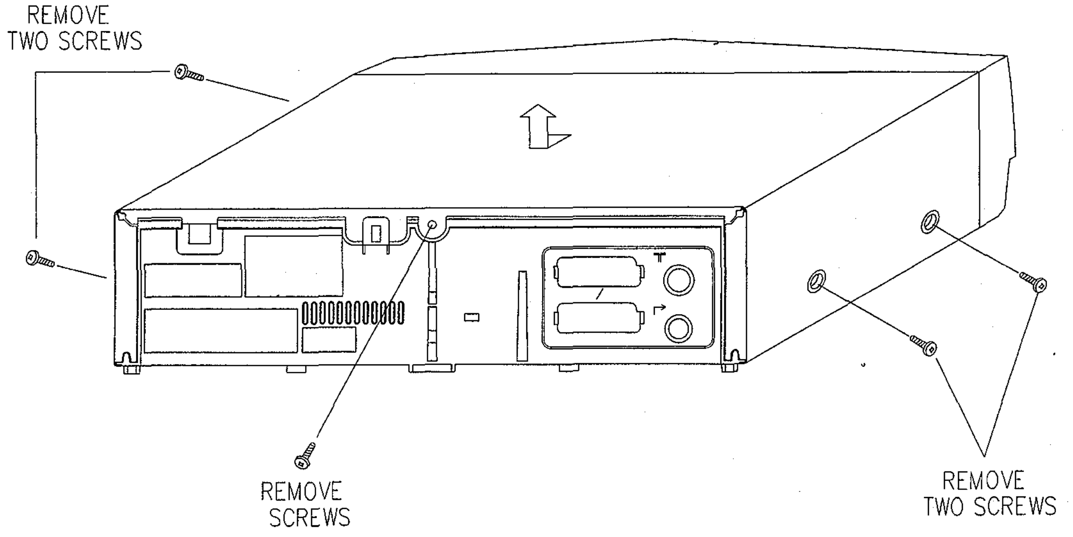
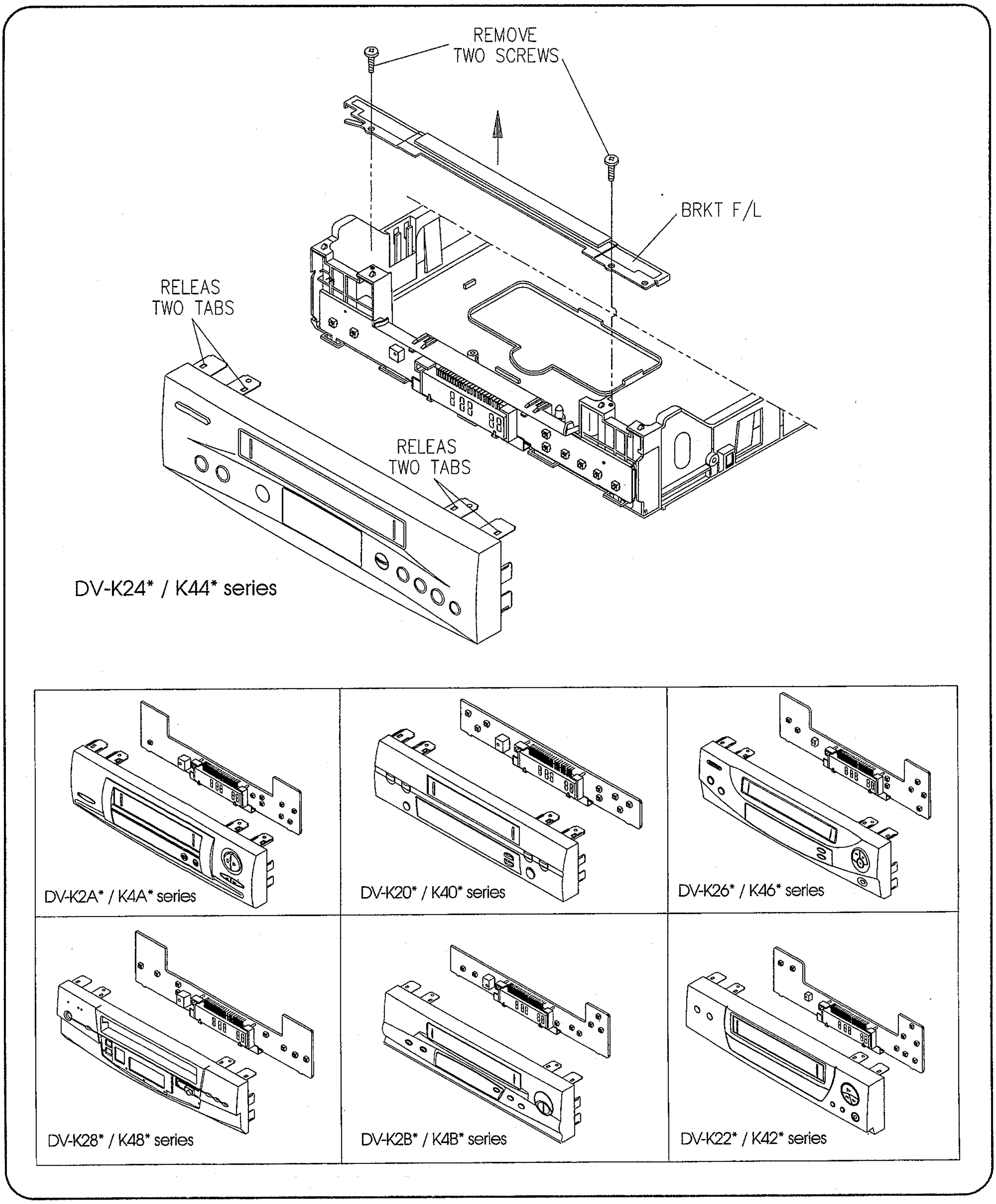

REMOVE
TWO SCREWS
REMOVE
SCREWS
REMOVE
TWO SCREWS

FIG. 1

2. FRONT PANEL REMOVAL (FIG. 2)

1) Remove the top cover.
2) Remove two (2) screws securing front panel.
3) Remove the F/L bracket.
4) Release seven (7) tabs holding the front panel.
5) Remove the front panel.


REMOVE
TWO SCREWS
BRKT F/L
RELEAS
TWO TABS
RELEAS
TWO TABS

DV-K24* / K44* series

DV-K2A* / K4A* series

DV-K20* / K40* series

DV-K26* / K46* series

DV-K28* / K48* series

DV-K2B* / K4B* series

DV-K22* / K42* series

FIG. 2

3. BOTTOM COVER REMOVAL (FIG. 3)

1) Remove the top cover and front panel.
2) Remove three (3) screws.
3) Release four (4) tabs and lift out the bottom cover.

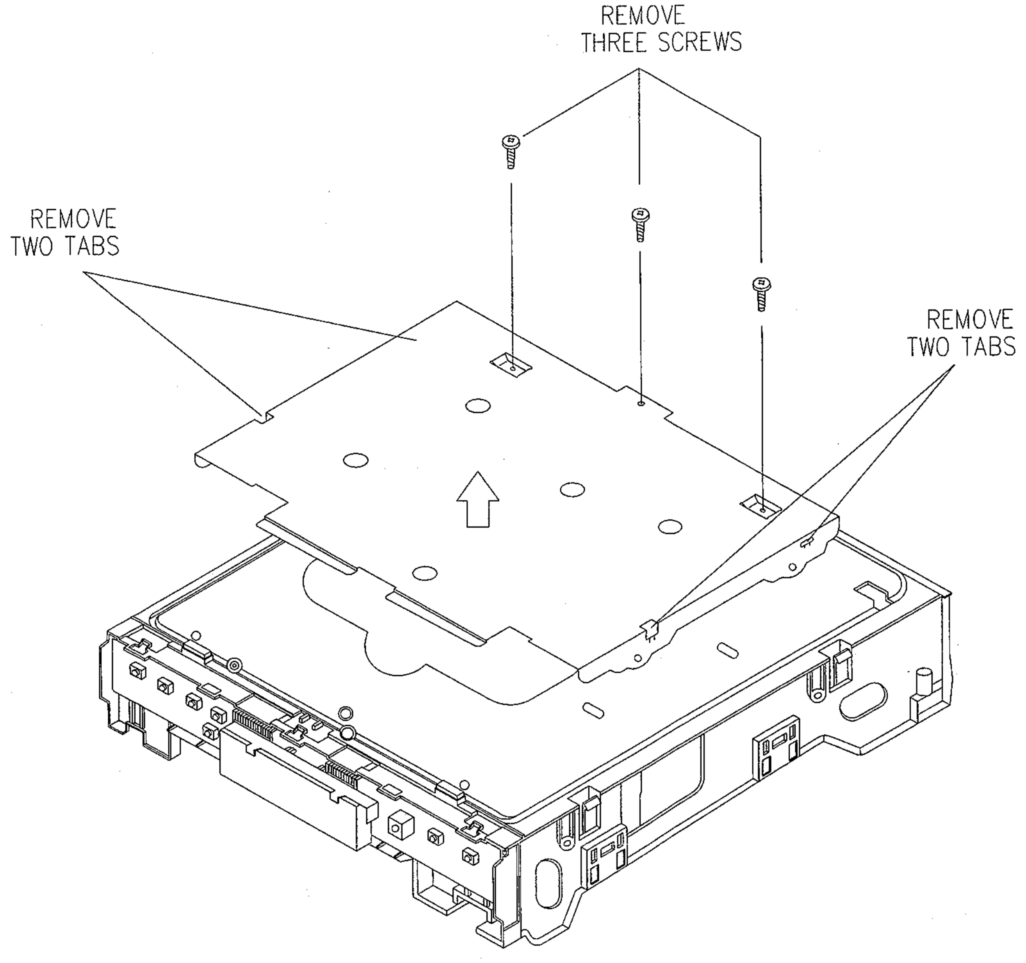

REMOVE
THREE SCREWS
REMOVE
TWO TABS
REMOVE
TWO TABS

FIG. 3

4. F/L DOOR REMOVAL (FIG. 4)

1) Open the F/L door 90°.
2) Remove the F/L door in the direction of arrow.

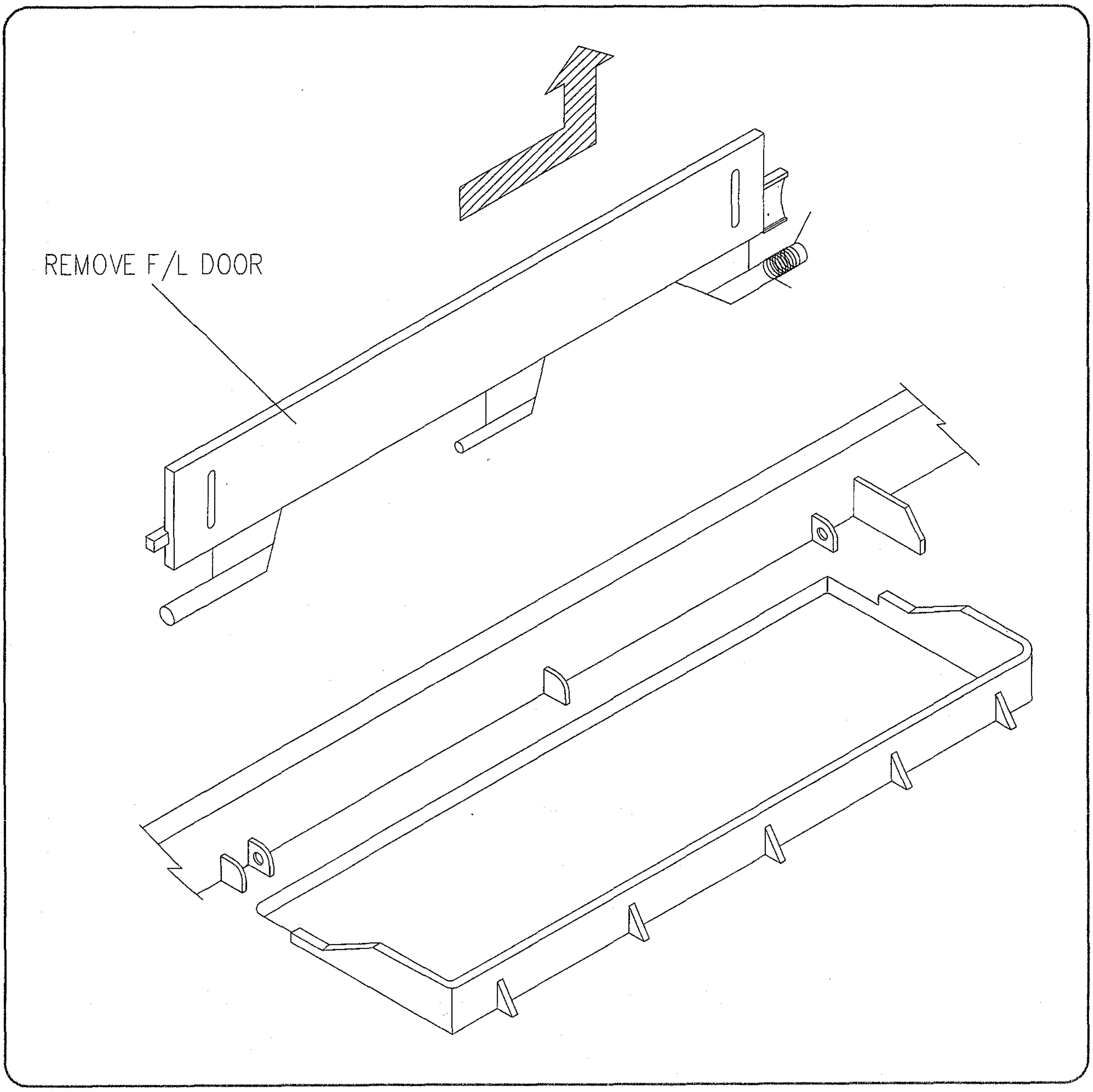
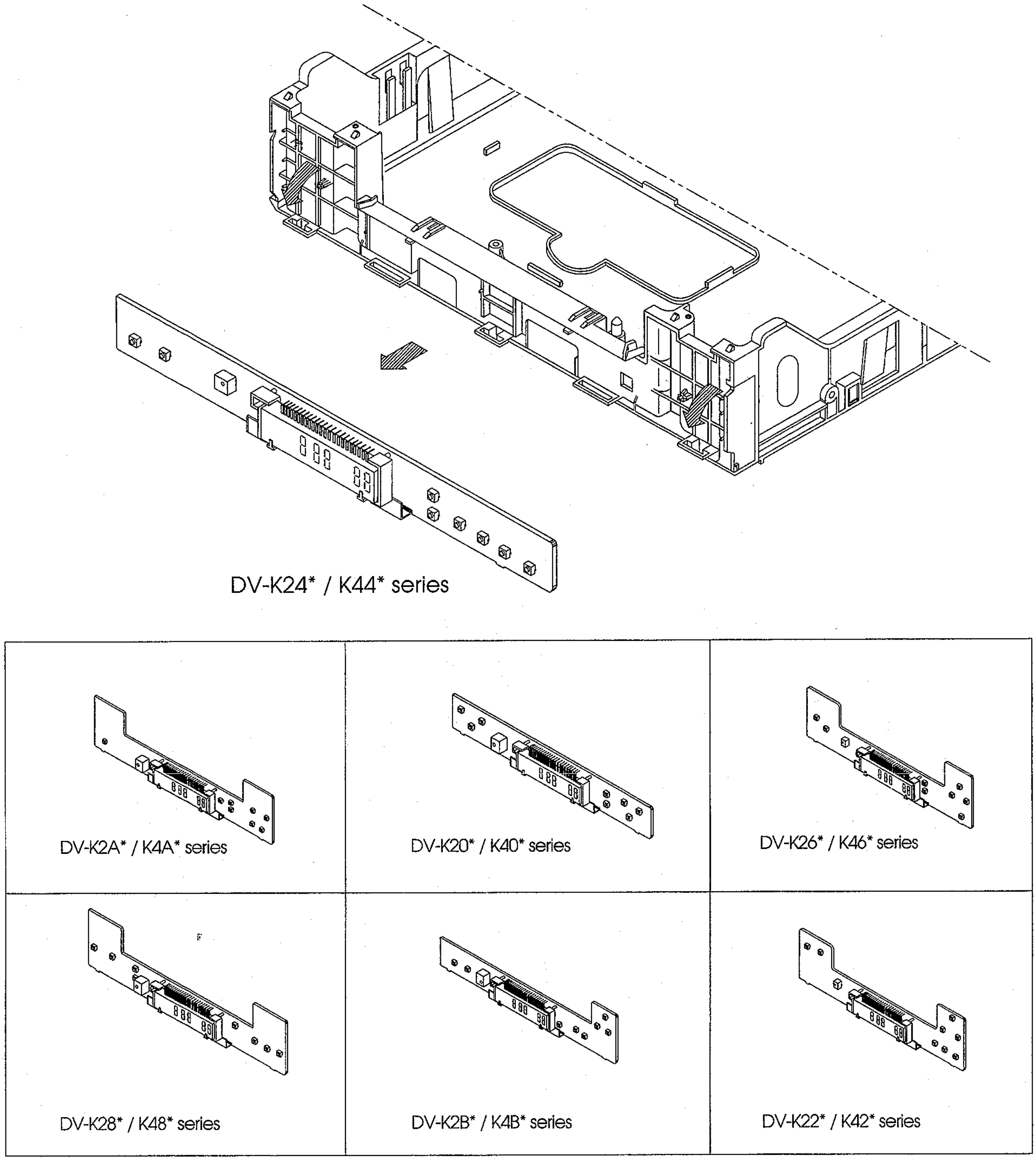

REMOVE F/L DOOR

FIG. 4

5. PCB LOGIC AS REMOVAL (FIG. 5)

2) Release two (2) tabs holding the PCB Logic AS.
3) Tilt PCB Logic AS forward to remove in the direction of arrow.



DV-K24* / K44* series

DV-K2A* / K4A* series

DV-K20* / K40* series

DV-K26* / K46* series

DV-K28* / K48* series

DV-K2B* / K4B* series

DV-K22* / K42* series

FIG. 5

6. PCB VIDEO AS/PCB SMPS AS REMOVAL (FIG. 6)

1) Remove the top cover, bottom cover and front panel.
2) Remove three (3) screws.
3) Remove the PCB SMPS AS in the direction of arrow.
4) Release four (4) tabs and lift out the BRKT PCB in the direction of arrow.
5) Pull out the PCB VIDEO AS in the direction of arrow.

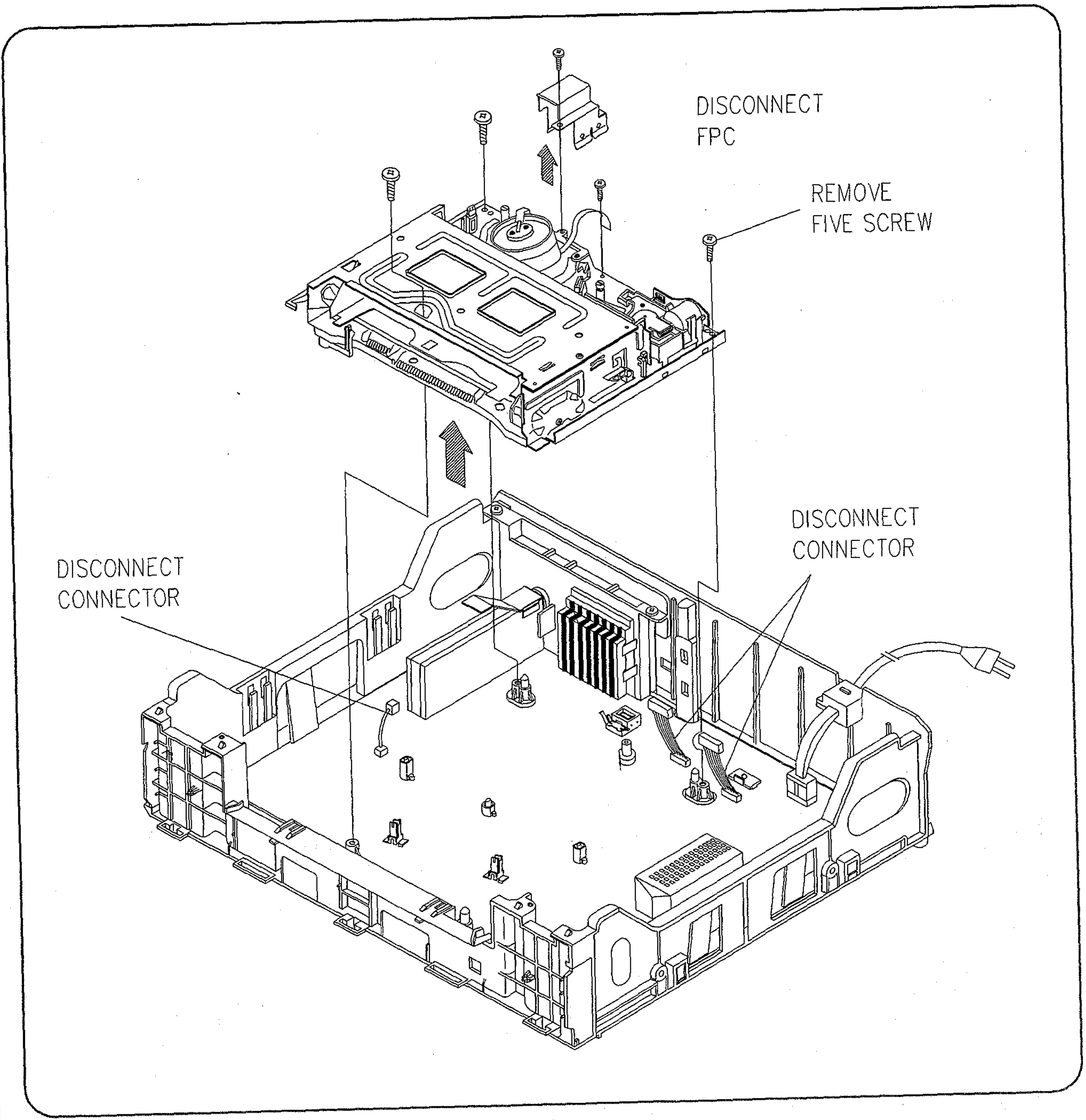

DISCONNECT FPC
REMOVE FIVE SCREW
DISCONNECT CONNECTOR
DISCONNECT CONNECTOR

FIG. 6

7. DECK AS / PCB HEAD AMP AS REMOVAL (FIG. 7)

1) Remove the top cover, bottom cover and front panel.
2) Remove five (5) screws.
3) Disconnect the connector and the FPC.
4) Pull out the DECK AS in the direction of arrow.

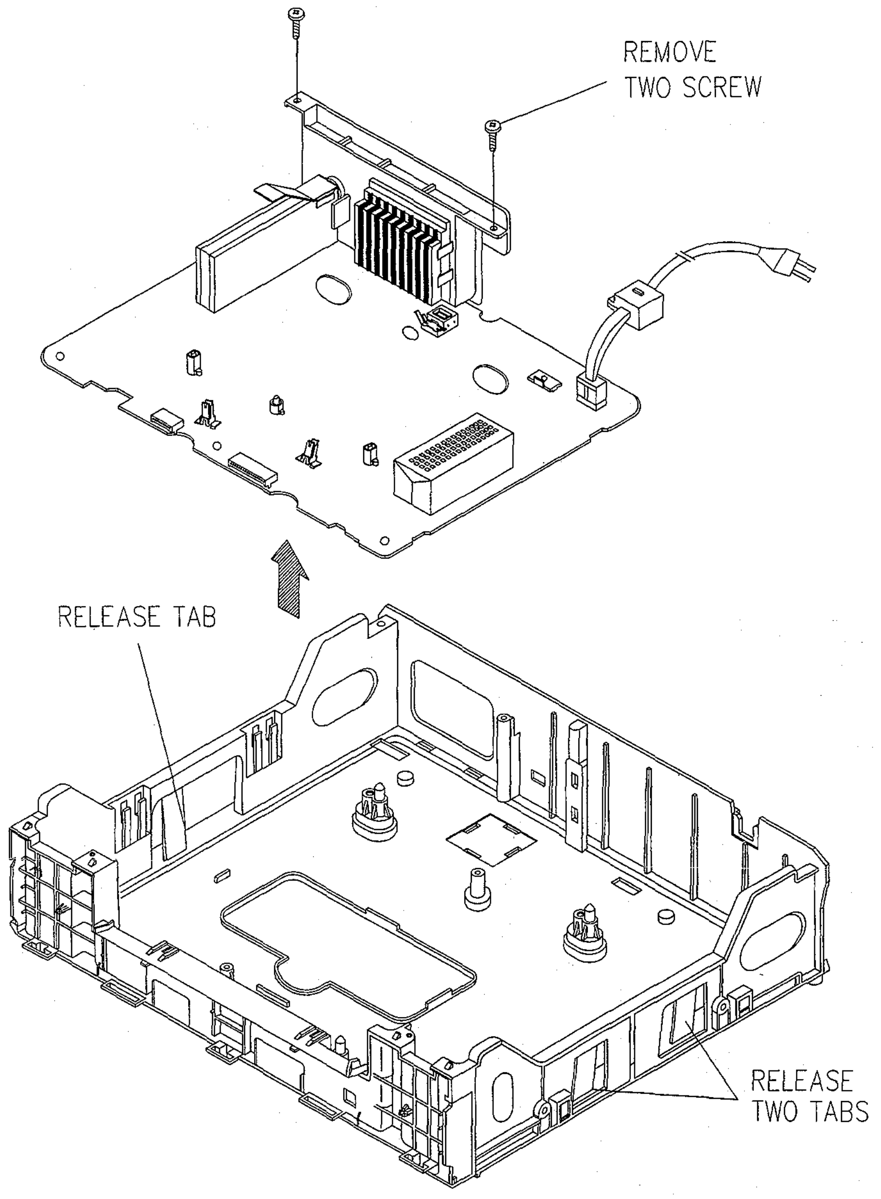

REMOVE
TWO SCREW
RELEASE TAB
RELEASE
TWO TABS

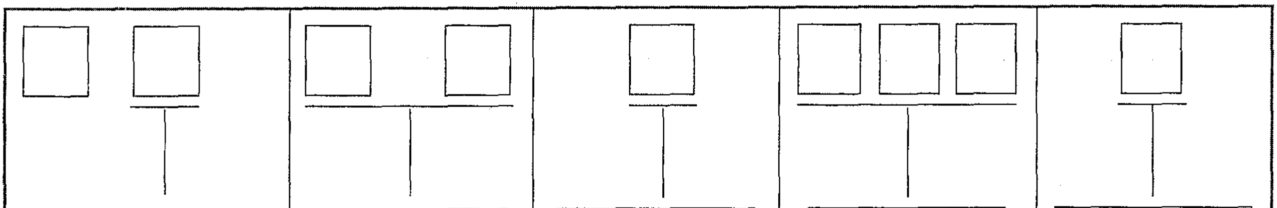
FIG. 7

SECTION 12. ELECTRICAL PARTS LIST

12-1. STANDARD PARTS NUMBER CODING

RESISTOR CODING

1. FIXED RESISTOR CODING



TYPE OF RESISTOR	
C	Composition Resistor
D	Carbon Resistor
F	Fusible Resistor
k	Ceramic Resistor
N	Metal Film Resistor
S	Metal-Oxide Film Resistor
W	Wire Wound Resistor
X	Cement Resistor
Y	Chip Resistor

RATED WATTAGE	
Code	Wattage
-A	1/6 W
-B	1/8 W
-4	1/4 W
-2	1/2 W
01	1 W
02	2W

DISTANCE	
Code	Distance
A	2.5 mm
B	5.0 mm
C	7.5 mm
D	10.0 mm
E	12.5 mm
F	15.0 mm
G	17.5 mm
H	20.2 mm
J	22.0 mm
k	25.0 mm
X	Auto Insertion
Z	Auto Insertion

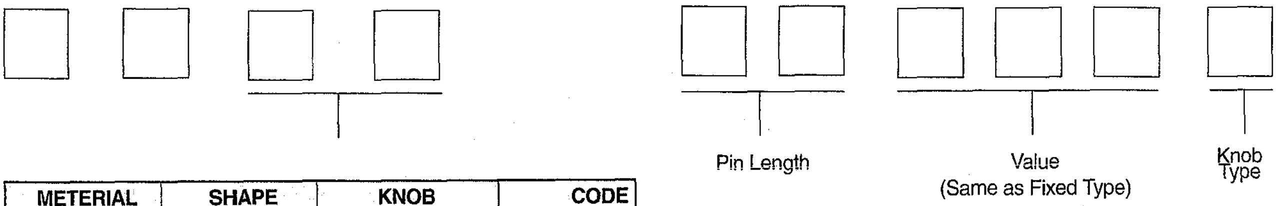
VALUE

EXAMPLE

478 ············ 0.47Ω
479 ············ 4.7Ω
471 ············ 470Ω
472 ············ 4.7Ω
473 ············ 47Ω

TOLERANCE	
Symbol	Tolerance
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%
N	±30%

2. SEMI-FIXED RESISTOR CONDING



METERIAL		SHAPE	KNOB	CODE	
CARBON FILM	1	VERTICAL	WITH	1	11
			WITHOUT	2	12
		HORIZONTAL	WITH	3	13
			WITHOUT	4	14
METAL GRAZE	5	VERTICAL	WITH	1	21
			WITHOUT	2	22
		HORIZONTAL	WITH	3	23
			WITHOUT	4	24
CARBON SOLID	5	VERTICAL	WITH	1	51
			WITHOUT	2	52
		HORIZONTAL	WITH	3	53
			WITHOUT	4	54
CERMIET	6	VERTICAL	WITH	1	61
			WITHOUT	2	62
		HORIZONTAL	WITH	3	63
			WITHOUT	4	64

RESISTOR CODING

1. NORMAL

TYPE	
CODE	**TPYE**
A	Aluminum
B	Barrier Layer
C	Ceramic
E	Electrolytic
L	Line Across
M	Mylar
S	Styrol
N	Metalized Polyester
Q	Mica
	Oil
T	Tantal

Distance

(Same As Fixed

Resistor)

Shape

or

Characteristic

DISTANCE	
Code	Voltage
0J	6.3V
1A	10V
1C	16V
1D	20V
1E	25V
1V	35V
1G	40V
1H	50V
1J	63J
2A	100V
2B	125V
2C	160V
2D	200V
2E	250V

Value
(Same as Fixed Resistor)

(Same as Fixed
Resistor)

2. TEMPERATURE COMPENSATION

Distance

(Same as Fixed

Resistor)

CHARACTERISTIC			
CAPACITANCE COEFFICIENT (PPM/℃)		TEMPERATURE COEFFICIENT(PPM/℃)	
A	+100	F	±15
B	+30	G	±30
C	0	H	±60
H	-30	J	±120
L	-80	K	±250
P	-150	L	±500
R	-220	M	±1000
S	-330	N	±2500
T	-470		
U	-750		
V	-1000		
SI	+350~ -1000		

Voltage
(Same as Normal)

Value
(Same as Fixed
Resistor)

Tolerance
(Same as Fixed
Resistor)

FUSE CODING

Regulation

TYPE	
F	Fiber
G	Glass Tube
L	Lead Type
	Glass Tube
T	Temperature
W	Wire
C	Ceramic
P	Plastic

SIZE		
A	MF41	4.6×16
B	MF51	5.2×20
C	MF60	6.3×30
D	MF61	6.3×31.8
E	MF01	10.3×38.1
F	MF04	14.3×50.8
G	MF05	20.5×76.2

Value
(Same as Fixed Resistor)

VOLTAGE	
1	AC125V
2	AC250V
3	125/250V

Characteristics

PCB POWER AS

REF.	PART CODE	PART NAME	PART DESCRIPTION
0M801	PVPWSWD445	PCB POWER MANUAL AS	K444DY-AQ(D180000, MAIN-IN)
CN51	97P6284000	CONN WAFER	YFAW025-105 ANGLE 3.5X4.5
CN61	97P6284300	CONN WAFER	YFAW025-108 ANGLE 3.5X4.5
C51	CMXL2G333K	C MYLAR	400V MEW 0.033MF K
C52	CBXB3A101J	C CERA	HR TYPE 1KV 100PF J
C62	CEXF1C681F	C ELECTRO	16V RX 680MF 10X20
C64	CEXF1C102F	C ELECTRO	10V RX 1000MF 10X20
D52	DZEG01C---	DIODE	EG01C
D55	DZD3ROESB2	DIODE ZENER	RD3.0ES-B2 52MM TAPPING
D62	DRGP20D---	DIODE	RGP20D
D63	DZA7610A--	DIODE ZENER	MA7160-A (52MM TAPPING)
D64	DSB360----	DIODE	SB360
IC51	183ZON3171	IC PHOTO COUPLER	ON 31710R
Q51	T2SC4234--	TR	2SC4234
R54	RS02F104JS	R M-OXIDE FILM	2W 100K OHM J SMALL
R55	RD-2D820JS	R CARBON FILM	1/2 82 OHM J SMALL (R BULK)
R56	RD-2D820JS	R CARBON FILM	1/2 82 OHM J SMALL (R BULK)
T51	57M8282191	TRANS SMPS	TSW-77P
T51A	97P5603700	INSULATION SMPS	PC T0.5
801	PVPWJ1D445	PCB POWER CHIP AS	DV-K444DY-AQ (97PB225200)
C54	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012
C55	HCBK472KCA	C CHIP CERA	50V X7R 4700PF K 2012
C56	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012
C67	HCBK683KCA	C CHIP CERA	50V X7R 0.068MF K 2012
R53	HRFT273JCA	R CHIP	1/10 27K OHM J 2012
R57	HRFT681JCA	R CHIP	1/10 680 OHM J 2012
R64	HRFT470JCA	R CHIP	1/10 47 OHM J 2012
802	PVPWJRD445	PCB POWER RADIAL AS	DV-K444DY-AQ 97(97PC302000)
C53	CEXD2C109A	C ELECTRO	160V RTL 1MF 8X11.5
C63	CEXF1H220F	C ELECTRO	50V RX 22MF 6.3X11
C65	CEXF1H220D	C ELECTRO	63V RZ 22MF 6.3X11.5 TP
C66	CEXF1J331F	C ELECTRO	6.3V RX 330MF 8X11.5
IC61	1TL431AN--	IC SHUNT	TL431AN
Q52	TSTC3203Y-	TR	STC3202-Y
803	PVPWJAD445	PCB POWER AXIAL AS	DV-K444DY-AQ (97PA489100)
D53	DZRA15----	DIODE	ERA15-02 52MM TAPPING
D54	DZN4148---	DIODE	1N4148 AUTO 52MM
D61	DZEU01Z---	DIODE	EU01Z
D65	DZEU01Z---	DIODE	EU01Z
D66	DZEU01Z---	DIODE	UE01Z
L51	5PB13857--	COIL BEAD	BI3857
R51	RD-4Z394JS	R CARBON FILM	1/4 390K OHM J SMALL
R52	RD-4Z394JS	R CARBON FILM	1/4 390K OHM J SMALL
R61	RD-4Z100JS	R CARBON FILM	1/4 10 OHM J SMALL
R62	RD-4Z360JS	R CARBON FILM	1/4 36 OHM J SMALL
R65	RD-AZ470G-	R CARBON FILM	1/6 47 OHM G
R66	RD-AZ132G-	R CARBON FILM	1/6 1.3K OHM G
R67	RD-AZ182G-	R CARBON FILM	1/6 1.8K OHM G
U51	97P65155PA	PCB POWER	197X197X1.6T/6 (K444DY)

PCB MAIN AS

REF.	PART CODE	PART NAME	PART DESCRIPTION
1	PVMPMSD446	PCB MAIN MANUAL AS	DV-K244DY-RG (97PD186200)
B001	97P0716900	BOARD ANT SCART 1	HI-PS (HB)
C801	CL1EE3104M	C LINE ACROSS	AC275V 0.1MF M PCX2 335W
C802	CH1TFB101K	C CERA AC	4.0KV 100PF K AD AC250V
C804	CH1TEE472M	C CERA AC	2.5KV 4700PF M AA AC250V
C805	CH1TFE222M	C CERA AC	2.5KV 4700PF M AA AC250V
C807	CEXF2G470V	C ELECTRO	400V RSS 47MF 16X25
C812	CEXF1E331F	C ELECTRO	25V RX 330MF 10X20
C813	CEXF1A102F	C ELECTRO	10V RX 1000MF 10X20
C822	CEXF1E331F	C ELECTRO	25V RX 330MF 10X20
D503	DS1R481T--	LED IR	SIR-48IT
D503A	97P2334200	HOLDER LED SENSOR	POM
D801	DX1WBA60--	DIODE BRIDGE	S1WBA60
IC001	12BKK8W5ML	IC OSD	LC74763-9650 (K8W5ML)
IC401	1LA70001--	IC PREAMP	LA70001 (2HD)
IC502	1BA6209---	IC	BA6209 (ROHM)
IC503	124LC08B--	IC MEMORY	24LC08B
IC505	1MC4558C--	IC OP AMP	MC4558C (KA4558)
JK601	97P6313400	JACK SCART	DSAM-9622
L801	5PLFSQ2014	FILTER LINE	SQ-2014 40MH
L802	5PLFSQ2014	FILTER LINE	SQ-2014 40MH
M401	97PB224600	CASE PRE AMP AS	DV-K444DY-AQ
M402	97P1409000	BOTTOM PRE AMP	ET T0.3
M802	97P0974300	PLATE EARTH-P	ET T=0.4
P201	97P1409000	CONN AS	6H-6S 140MM SHIELD
P202	97P8811614	CONN AS (Y51210)	2H-2S 100MM
P401	97P8811614	CONN HOU.	00-8370-041-000-800
P501	97P62T112A	CONN B/B (PLUG)	TKC-GP PLUG 10P
P502	97P62T1126	CONN B/B (PLUG)	TKC-GP PLUG 6P
P503	97P8810812	CONN AS (Y10712)	7H-7S, 120MM
P504	97P62G05CM	CONN HOUSING 2	GB150 RECEP 1.5MM 21P
P505	97P6269100	CONN HOUSING 2	GB150 RECEP 1.5CEP
P506	97P6269100	CONN WAFER	00-8283-0712-00000
P801	97P62Y02X2	CONN WAFER	YFW800 STR 10MM 2P
Q811	TKSD2058Y-	TR	KSD2058-Y
Q812	TKSD2058Y-	TR	KSD2058-Y
FR101	97P7607400	TUNER 3 IN 1	ALTMI-BG1 (PAL-B/G)
R803	RW02B229J-	TR MICRO	2W 2.2 OHM J
SW501	5S70101059	SW MIDRO	SPPB62
S501	TST5811---	TR PHOTO	ST-5811 (D-RANK)
S501A	97P2338200	HOLDER TR	ABS
S502	TST5811---	TR PHOTO	ST-5811 (D-RANK)
S502A	97P2338200	HOLDER TR	ABS
S503	97P0S01800	SENSOR REEL	SG-239S
S504	97P0S01800	SENSOR REEL	SG-239S
T201	560202L692	COIL OSC	DEO-006
X301	5XE4R433TB	CRYSTAL QUARTZ	HC-49/U 4.433619MHZ 15PPM
X502	5XZR03276G	CRYSTAL QUARTZ	SO-26 32.675000KHZ 10PPM
11	PVMPJ1D446	PCB MAIN CHIP AS	DV-K244DY-RG (97PB229500)

REF.	PART CODE	PART NAME	PART DESCRIPTION
C003	HCQK240JCA	C CHIP CERA	50V CH 24PF J 2012
C004	HCQK240JCA	C CHIP CERA	50V CH 24PF J 2012
C005	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C006	HCBK682KCA	C CHIP CERA	50V X7R 6800PF K 2012
C009	HCLK201JCA	C CHIP CERA	50V SL 200PF J 2012
C010	HCLK560JCA	C CHIP CERA	50V SL 56PF J 2012
C015	HCLK221JCA	C CHIP CERA	50V SL 220PF J 2012
C016	HCLK221JCA	C CHIP CERA	50V SL 220PF J 2012
C017	HCLK221JCA	C CHIP CERA	50V SL 220PF J 2012
C018	HCQK240JCA	C CHIP CERA	50V CH 24PF J 2012
C019	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012
C171	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C172	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C174	HCBK123KCA	C CHIP CERA	50V X7R 0.012MF K 2012
C175	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C177	HCLK101JCA	C CHIP CERA	50V SL 100PF J 2012
C184	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C187	HCLK471JCA	C CHIP CERA	50V SL 470PF J 2012
C192	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C203	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C205	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C206	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C210	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C214	HCBK152KCA	C CHIP CERA	50V X7R 1500PF K 2012
C215	HCBK122KCA	C CHIP CERA	50V X7R 1200PF K 2012
C218	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C220	HCBK182KCA	C CHIP CERA	50V X7R 1800PF K 2012
C221	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C224	HCBK153KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C302	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012
C304	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C305	HCBK103KCA	C CHIP CERA	50V X7R 0.015MF K 2012
C307	HCLK509JCA	C CHIP CERA	50V SL 5PF J 2012
C308	HCLK270JCA	C CHIP CERA	50V SL 27PF J 2012
C310	HCLK220JCA	C CHIP CERA	50V SL 22PF J 2012
C311	HCQK361JCA	C CHIP CERA	50V CH 360PF J 2012
C312	HCLK201JCA	C CHIP CERA	50V SL 200PF J 2012
C314	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C319	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C323	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C328	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C329	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C332	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C334	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C335	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C336	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012
C338	HCBK473KCA	C CHIP CERA	50V X7R 0.047MF K 2012
C340	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C344	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012

REF.	PART CODE	PART NAME	PART DESCRIPTION
C347	HCLK101JCA	C CHIP CERA	50V SL 100PF J 2012
C348	HCLK201JCA	C CHIP CERA	50V SL 200PF J 2012
C349	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C351	HCLK200JCA	C CHIP CERA	50V SL 20PF J 2012
C352	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C353	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C402	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012
C403	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C404	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C405	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C406	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C409	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C411	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C412	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C413	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C415	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C450	HCLK200JCA	C CHIP CERA	50V SL 200PF J 2012
C503	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C506	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C508	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012
C509	HCQK180JCA	C CHIP CERA	50V CH 18PF J 2012
C510	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012
C511	HCQK220JCA	C CHIP CERA	50V CH 22PF J 2012
C513	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C516	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012
C522	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C523	HCBK102KCA	C CHIP CERA	50V X7R 1000PF K 2012
C525	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C526	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C527	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C528	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C530	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C531	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C532	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C534	HCBK272KCA	C CHIP CERA	50V X7R 2700PF K 2012
C535	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C536	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C537	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C538	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C539	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C541	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C542	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C543	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C545	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C547	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C549	HCFK104ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C550	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C555	HCLK101JCA	C CHIP CERA	50V SL 100PF J 2012
C620	HCLK471JCA	C CHIP CERA	50V SL 470PF J 2012

REF.	PART CODE	PART NAME	PART DESCRIPTION
C627	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF Z 2012
C814	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C820	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C821	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
IC301	1LA71511M-	IC A/V	LA71511M
IC302	1LC89977M-	IC CCD	LC89977M
IC501	168KK4X1TS	IC MICOM	M3777M7H-GP (K4X1TS) PAL
RJ01	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ02	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ03	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ04	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ05	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ06	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ07	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ08	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ09	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ10	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ11	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ12	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ13	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ14	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ15	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ16	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ17	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ18	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ19	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ20	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ21	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ22	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ23	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ24	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ25	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ26	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ27	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ28	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ29	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ30	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ31	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ32	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ33	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ34	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ35	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ36	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ37	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ38	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ39	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ40	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ43	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ45	HRF8000-EA	R CHIP	1/8 0 OHM 3216

REF.	PART CODE	PART NAME	PART DESCRIPTION
RJ46	HRF8000-EA	R CHIP	1/8 0 OHM 3216
R001	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R002	HRFT121JCA	R CHIP	1/10 120 OHM J 2012
R003	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012
R004	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012
R005	HRFT202JCA	R CHIP	1/10 2K OHM J 2012
R006	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R010	HRFT222JCA	R CHIP	1/10 2.2K OHM J 2012
R006	HRFT204JCA	R CHIP	1/10 200K OHM J 2012
R173	HRFT362JCA	R CHIP	1/10 3.6K OHM J 2012
R175	HRFT203JCA	R CHIP	1/10 20K OHM J 2012
R182	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R184	HRFT303JCA	R CHIP	1/10 30K OHM J 2012
R185	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R186	HRFT183JCA	R CHIP	1/10 18K OHM J 2012
R190	HRFT563JCA	R CHIP	1/10 56K OHM J 2012
R192	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
R201	HRFT123JCA	R CHIP	1/10 12K OHM J 2012
R203	HRFT229JCA	R CHIP	1/10 2.2 OHM J 2012
R203	HRFT225JCA	R CHIP	1/10 2.2M OHM J 2012
R205	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012
R206	HRFT513JCA	R CHIP	1/10 51K OHM J 2012
R207	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012
R208	HRFT622JCA	R CHIP	1/10 6.2K OHM J 2012
R209	HRFT202JCA	R CHIP	1/10 2K OHM J 2012
R210	HRFT562JCA	R CHIP	1/10 5.6K OHM J 2012
R212	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012
R213	HRFT229JCA	R CHIP	1/10 2.2 OHM J 2012
R215	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R216	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R217	HRFT512JCA	R CHIP	1/10 5.1K OHM J 2012
R218	HRFT561JCA	R CHIP	1/10 560 OHM J 2012
R220	HRFT303JCA	R CHIP	1/10 30K OHM J 2012
R221	HRFT334JCA	R CHIP	1/10 330K OHM J 2012
R222	HRFT181JCA	R CHIP	1/10 180 OHM J 2012
R223	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012
R224	HRFT123JCA	R CHIP	1/10 12K OHM J 2012
R225	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012
R227	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R301	HRFT391JCA	R CHIP	1/10 390 OHM J 2012
R302	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012
R304	HRFT820JCA	R CHIP	1/10 82 OHM J 2012
R306	HRFT272JCA	R CHIP	1/10 2.7K OHM J 2012
R307	HRFT823JCA	R CHIP	1/10 82K OHM J 2012
R308	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R309	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012
R311	HRFT122JCA	R CHIP	1/10 1.2K OHM J 2012
R313	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R314	HRFT102JCA	R CHIP	1/10 1K OHM J 2012

REF.	PART CODE	PART NAME	PART DESCRIPTION
R315	HRFT822JCA	R CHIP	1/10 8.2K OHM J 2012
R316	HRFT182JCA	R CHIP	1/10 1.8K OHM J 2012
R317	HRFT513JCA	R CHIP	1/10 51K OHM J 2012
R318	HRFT513JCA	R CHIP	1/10 51K OHM J 2012
R320	HRFT302JCA	R CHIP	1/10 3K OHM J 2012
R321	HRFT202JCA	R CHIP	1/10 2K OHM J 2012
R322	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R323	HRFT104JCA	R CHIP	1/10 100K OHM J 2012
R324	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R325	HRFT333JCA	R CHIP	1/10 33K OHM J 2012
R326	HRFT183JCA	R CHIP	1/10 18K OHM J 2012
R327	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R329	HRFT155JCA	R CHIP	1/10 1.5M OHM J 2012
R351	HRFT101JCA	R CHIP	1/10 100 OHM J 2012
R352	HRFT331JCA	R CHIP	1/10 330 OHM J 2012
R402	HRFT152JCA	R CHIP	1/10 1.5K OHM J 2012
R403	HRFT471JCA	R CHIP	1/10 470 OHM J 2012
R409	HRFT183JCA	R CHIP	1/10 18K OHM J 2012
R410	HRFT202JCA	R CHIP	1/10 2K OHM J 2012
R411	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R5A1	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R5A2	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R501	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012
R506	HRFT304JCA	R CHIP	1/10 300K OHM J 2012
R507	HRFT304JCA	R CHIP	1/10 300K OHM J 2012
R508	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R509	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R513	HRFT153JCA	R CHIP	1/10 15K OHM J 2012
R517	HRFT753JCA	R CHIP	1/10 75K OHM J 2012
R518	HRFT201JCA	R CHIP	1/10 200 OHM J 2012
R519	HRFT273JCA	R CHIP	1/10 27K OHM J 2012
R520	HRFT201JCA	R CHIP	1/10 200 OHM J 2012
R521	HRFT273JCA	R CHIP	1/10 27K OHM J 2012
R523	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R524	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R525	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R526	HRFT912JCA	R CHIP	1/10 9.1K OHM J 2012
R528	HRFT473JCA	R CHIP	1/10 47K OHM J 2012
R529	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012
R530	HRFT391JCA	R CHIP	1/10 390 OHM J 2012
R531	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R532	HRFT221JCA	R CHIP	1/10 220 OHM J 2012
R533	HRFT752JCA	R CHIP	1/10 7.5K OHM J 2012
R534	HRFT105JCA	R CHIP	1/10 1M OHM J 2012
R541	HRFT105JCA	R CHIP	1/10 1M OHM J 2012
R542	HRFT511JCA	R CHIP	1/10 510 OHM J 2012
R544	HRFT104JCA	R CHIP	1/10 100K OHM J 2012
R546	HRFT473JCA	R CHIP	1/10 47K OHM J 2012
R547	HRFT473JCA	R CHIP	1/10 47K OHM J 2012

REF.	PART CODE	PART NAME	PART DESCRIPTION
R548	HRFT101JCA	R CHIP	1/10 100 OHM J 2012
R549	HRFT101JCA	R CHIP	1/10 100 OHM J 2012
R550	HRFT332JCA	R CHIP	1/10 3.3K OHM J 2012
R552	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R557	HRFT473JCA	R CHIP	1/10 47K OHM J 2012
R558	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R559	HRFT362JCA	R CHIP	1/10 3.6K OHM J 2012
R563	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R565	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R566	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R567	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R569	HRFT104JCA	R CHIP	1/10 100K OHM J 2012
R572	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R573	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R574	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R576	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R579	HRFT221JCA	R CHIP	1/10 220 OHM J 2012
R582	HRFT473JCA	R CHIP	1/10 47K OHM J 2012
R585	HRFT473JCA	R CHIP	1/10 47K OHM J 2012
R586	HRFT393JCA	R CHIP	1/10 39K OHM J 2012
R587	HRFT102JCA	R CHIP	1/10 1K OHM J 2012
R603	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R604	HRFT103JCA	R CHIP	1/10 10K OHM J 2012
R607	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
R610	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
R814	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
R817	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
R819	HRFT750JCA	R CHIP	1/10 75 OHM J 2012
12	PVMPJRD446	PCB MAIN RADIAL AS	DV-K244DY-RG(97PC305200)
C002	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C007	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C014	CEXF1H229A	C ELECTRO	50V RSM 2.2MF (4X7) TP
C020	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C021	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C176	CEXF1A471V	C ELECTRO	10V RSM 470MF 8X11.5
C183	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C186	CEXF1H478A	C ELECTRO	50V RSM 0.47MF 4X7
C188	CMXL1J104K	C MYLAR	MEU 63V 0.1MF K
C189	CMXL1J104K	C MYLAR	MEU 63V 0.1MF K
C190	CMXL1J104K	C MYLAR	MEU 63V 0.1MF K
C195	CEXF1H229A	C ELECTRO	50V RSM 2.2MF (4X7) TP
C202	CEXF1E220A	C ELECTRO	25V RSM 22MF 6.3X7
C204	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C207	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C208	CEXF1H479A	C ELECTRO	50V RSM 4.7MF 4X7
C211	CMXL2A333J	C MYLAR	100V 0.033MF J (TP)
C212	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C213	CMXL2A223	C MYLAR	100V 0.022MF J (TP)
C216	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP

REF.	PART CODE	PART NAME	PART DESCRIPTION
C217	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C219	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C222	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C223	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C301	CEXF1H108A	C ELECTRO	50V RSM 0.1MF 4X7
C309	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C315	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C317	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C320	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C322	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C324	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C325	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C326	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C327	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C330	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C331	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C333	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C337	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C339	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C341	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)
C342	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)
C343	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C345	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C407	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C408	CEXF1H109A	C ELECTRO	50V RSM 1MF (4X7) TP
C501	CDXA0H104K	C SUPER	5.5V0.1F TAPING
C504	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP
C517	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C519	CEXF1A101A	C ELECTRO	10V RSM 100MF 6.3X7
C521	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C524	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C544	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C607	5CPX100J--	COIL PEAKING	PL 10UH J (TAPPING)
C622	CEXF1E471V	C ELECTRO	10V RSS 470MF 8X11.5
C815	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C816	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C817	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C818	CEXF1H100A	C ELECTRO	50V RSM 10MF (5X7) TP
C819	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
F801A	97P460170P	CLIP FUSE	PFC5000-0702
F801B	97P460170P	CLIP FUSE	PFC5000-0702
IC504	1K1A7033P-	IC	KIA7033P
L001	5CPX101J--	COIL PEAKING	PL 100UH J (TAPPING)
L002	5CPX569G-T	COIL PEAKING	EL0405RA 5R6G RADIAL (TP)
L003	5CPX220J--	COIL PEAKING	22UH J (RADIAL)
L005	5CPX101J--	COIL PEAKING	PL 100UH J (TAPPING)
L171	5CPX100J--	COIL PEAKING	PL 10UH J (TAPPING)
L172	5CPX100J--	COIL PEAKING	PL 10UH J (TAPPING)
L201	5CPX101J--	COIL PEAKING	PL 100UH J (TAPPING)

REF.	PART CODE	PART NAME	PART DESCRIPTION
L304	5CPX101J--	COIL PEAKING	PL 100UH J (TAPPING)
L306	5CPX100J--	COIL PEAKING	PL 10UH J (TAPPING)
L401	5CPX100J--	COIL PEAKING	PL 10UH J (TAPPING)
L811	56C220K686	COIL CHOKE	22UH K 27.5X0.4D
L812	56C220K686	COIL CHOKE (CAP TYPE)	22UH K (CAP TYPE) 9X11.1
Q002	TZTA1266Y--	TR	KTA1266Y- (AUTO) (1015Y)
Q171	TZSR2001--	TR	KSR2001 (AUTO)
Q172	TZSR2001--	TR	KSR2001 (AUTO)
Q173	TZSR2001--	TR	KSR2001 (AUTO)
Q174	TZSR1004--	TR	KSR1004 (AUTO)
Q175	TZSR1004--	TR	KSR1004 (AUTO)
Q176	TZSR1004--	TR	KSR1004 (AUTO)
Q177	TZTA1273Y--	TR	KTA1273Y- (966Y)
Q178	TZSR1001--	TR	KSR1001 (AUTO)
Q179	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q180	TZTA1273Y--	TR	KTA1273Y- (966Y)
Q201	TZTC3202Y--	TR	KTA3202Y- (AUTO) (1959Y)
Q202	TZTA1266Y--	TR	KTA1266Y- (AUTO) (1015Y)
Q203	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q204	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q205	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q301	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q302	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q303	TZTA1266Y--	TR	KTA1266Y- (AUTO) (1015Y)
Q304	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q306	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q401	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q501	TZSR1001--	TR	KSR1001 (AUTO)
Q502	TZTA1273Y--	TR	KTA1273Y- (966Y)
Q503	TZSR1001--	TR	KSR1001 (AUTO)
Q504	TZTA1273Y--	TR	KTA1273Y- (966Y)
Q505	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
Q602	TZSR1004--	TR	KSR1004 (AUTO)
Q603	TZSR2001--	TR	KSR2001 (AUTO)
Q813	TZTC3198Y--	TR	KTA3198Y- (1815Y) (AUTO)
X001	5X17R73UD	CRYSTAL QURTZ	HC-49/S 17.734476MHZ 25PP
X501	5X16R00UD	CRYSTAL QURTZ	HC-49/S 16.000000MHZ 30PP
13	PVMPJAD446	PCB MAIN AXIAL AS	DV-K244KY-RG (97PA491600)
C001	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C180	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C181	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C182	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C209	CCZF1H104Z	C CERA	HIKF 50V 0.1MF Z AXIAL
C306	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C318	CCZF1H104Z	C CERA	HIKF 50V 0.1MF Z AXIAL
C321	CCZF1H104Z	C CERA	HIKF 50V 0.1MF Z AXIAL
C346	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C502	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
C505	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)

REF.	PART CODE	PART NAME	PART DESCRIPTION
C614	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
D171	DZN4148---	DIODE	1N4148 AUTO 52MM
D172	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D201	DZN4148---	DIODE	1N4148 AUTO 52MM
D301	DZN4148---	DIODE	1N4148 AUTO 52MM
D303	DZN4148---	DIODE	1N4148 AUTO 52MM
D501	DZN4148---	DIODE	1N4148 AUTO 52MM
D502	DZN4148---	DIODE	1N4148 AUTO 52MM
D504	DZZ6R2BM--	DIODE ZENER	DZ 6.2BM (AUTO)
D505	DZN4148---	DIODE	1N4148 AUTO 52MM
D507	DZN4148---	DIODE	1N4148 AUTO 52MM
D601	DZN4148---	DIODE	1N4148 AUTO 52MM
D602	DZZ13BM---	DIODE ZENER	UZ-13BL
D603	DZZ13BM---	DIODE ZENER	UZ-13BL
D606	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D607	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D608	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D609	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D614	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D615	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D616	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D617	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D811	DZN4003---	DIODE	1N4003
D812	DZN4003---	DIODE	1N4003
D813	DZN4003---	DIODE	1N4003
D814	DZZ9R1BM--	DIODE ZENER	DZ-9.1BM AUTO
D815	DZUZT33---	DIODE ZENER	UZT33
D816	DZZ5R6BM--	DIODE ZENER	DZ 5.6BM (AUTO)
D817	DZZ3R9B---	DIODE ZENER	DZ 3R9B (3R9) (AUTO)
D818	DZN4148---	DIODE	1N4148 AUTO 52MM
L301	5CPZ560K02	COIL PEAKING	56UH K (AXIAL 3.5MM)
L302	5CPZ121K02	COIL PEAKING	120UH K (AXIAL 3.5MM)
L303	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
L501	5PB13857--	COIL BEAD	BI3857
L603	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)
R011	RD-4Z391J-	R CARBON FILM	1/4 390 OHM J
R051	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R171	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J
R172	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R174	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R176	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R177	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R181	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J
R183	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R189	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J
R204	RD-AZ513J-	R CARBON FILM	1/6 51K OHM J
R211	RD-AZ470J-	R CARBON FILM	1/6 47 OHM J
R214	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J
R219	RD-AZ132G-	R CARBON FILM	1/6 1.3K OHM J

REF.	PART CODE	PART NAME	PART DESCRIPTION
R226	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R303	RD-AZ391J-	R CARBON FILM	1/6 390 OHM J
R319	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J
R328	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J
R407	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J
R408	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R502	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R510	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R511	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R512	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R514	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R515	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R522	RD-AZ301J-	R CARBON FILM	1/6 300 OHM J
R536	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R537	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R538	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R539	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R540	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R543	RD-AZ106J-	R CARBON FILM	1/6 10M OHM J
R551	RD-AZ474J-	R CARBON FILM	1/6 470K OHM J
R553	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R554	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R555	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J
R556	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J
R560	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J
R561	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J
R562	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J
R571	RD-AZ301J-	R CARBON FILM	1/6 300 OHM J
R575	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R577	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R580	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R581	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R583	RD-AZ242J-	R CARBON FILM	1/6 2.4K OHM J
R584	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R588	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J
R801	RC-2Z565K0	R CARBON COMP	1/2 5.6M OHM K
R802	RC-2Z565K0	R CARBON COMP	1/2 5.6M OHM K
R811	RD-4Z751J-	R CARBON FILM	1/4 750 OHM J
R812	RD-AZ300J-	R CARBON FILM	1/6 30 OHM J
R813	RD-4Z622J-	R CARBON FILM	1/4 6.2K OHM J
R815	RD-4Z511J-	R CARBON FILM	1/4 510 OHM J
R816	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R818	RD-4Z511J-	R CARBON FILM	1/4 510 OHM J
U001	97P65155MA	PCB MAIN	300X246X1.6T (K444D)

PCB LOGIC AS

REF.	PART CODE	PART NAME	PART DESCRIPTION
3	PVLASWD446	PCB LOGIC MANUAL AS	DV-K244DY-RG (97PD186300)
G701	DSVV6SS25-	DIGITRON (V.F.D)	SVV-6SS25
H701	1GP3U771R-	IC UNIT R/RECEIVER	GP3U771R
M701	97P2340500	HOLDER DIGITRON	PP
P701	97P62G04CM	CONN HOUSING1	GB150 RECEP 1.5MM 21P
P701A	97P62G03CM	CONN WAFER	GB150 PLUG 1.5MM 21P
P702	97P62G04CB	CONN HOUSING1	GB150 RECEP 1.5MM 21P
P702A	97P62G03CB	CONN WAFER	GB150 PLUG 1.5MM 21P
31	PVLAJRD446	PCB LOGIC RADIAL AS	DV-K224DY-RG (D445-S)
C701	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C703	CXSL1H470J	C CERA	50V SL 47P J
C704	CXSL1H470J	C CERA	50V SL 47P J
SW709	5S50101Z90	SW TACT	SKHV10910A
SW710	5S50101Z90	SW TACT	SKHV10910A
SW711	5S50101Z90	SW TACT	SKHV10910A
SW712	5S50101Z90	SW TACT	SKHV10910A
SW713	5S50101Z90	SW TACT	SKHV10910A
SW714	5S50101Z90	SW TACT	SKHV10910A
SW715	5S50101Z90	SW TACT	SKHV10910A
SW716	5S50101Z90	SW TACT	SKHV10910A
32	PVLAJAD446	PCB LOGIC AXIAL AS	DV-K244DY-RG (D445-CH)
C702	CBZP1C103M	C CERA SEMI	16V Y5S 0.01MF M (AXIAL)
D711	DZN4148---	DIODE	1N4148 AUTO 52MM
D712	DZN4148---	DIODE	1N4148 AUTO 52MM
D713	DZN4148---	DIODE	1N4148 AUTO 52MM
D714	DZN4148---	DIODE	1N4148 AUTO 52MM
R701	RD-4Z279J-	R CARBON FILM	1/4 2.7 OHM J
R702	RD-AZ510J-	R CARBON FILM	1/6 51 OHM J
R703	RD-AZ510J-	R CARBON FILM	1/6 51 OHM J
U701	97P65155LA	PCB LOGIC	300X246X1.6T (K444D)

PCB PIF AS

REF.	PART CODE	PART NAME	PART DESCRIPTION
2	PVPASWS061	PCB PIF MANUAL AS	DV-K444SY-AQ (97PD179900)
L199	56B215K694	COIL PIF	KTRF-7780B
M101	97P0468900	CASE IF	ET T0.4
P701	97P6284100	CONN WAFER	YFAW025-106 ANGLE 3.5X4.5
P702	97P6283900	CONN WAFER	YFAW025-104 ANGLE 3.5X4.5
Z101	5PK3953M--	FILTER SAW	K3935M
Z102	5PK9453M--	FILTER SAW	K9453M
Z104	5PTPS55MB-	FILTER CERA	TPS-5.5MB
Z105	5PC5R500A	FILTER CERA	SFSH5.5MCB 5.5MHZ
21	PVPAJ1S061	PCB PIF CHIP AS	DV-K444SY-AQ (97PB225000)
C101	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C102	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C103	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C106	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
C109	HCFK1040ZCA	C CHIP CERA	50V Y5V 0.1MF Z 2012
C111	HCFK333ZCA	C CHIP CERA	Y5V 50V 0.033MF K 2012
C115	HCFK223ZCA	C CHIP CERA	50V Y5V 0.022MF K 2012
C116	HCQK680JCA	C CHIP CERA	50V CH 68PF J 2012
C118	HCBK103KCA	C CHIP CERA	50V X7R 0.01MF K 2012
D101	DBA582---B	DIODE CHIP	BA582 (SMD TYPE)
D102	DBA582---B	DIODE CHIP	BA582 (SMD TYPE)
IC101	1TDA9814T-	IC IF	TDA9814T
RJ01	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ02	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ03	HRF8000-EA	R CHIP	1/8 0 OHM 3216
RJ04	HRF8000-EA	R CHIP	1/8 0 OHM 3216
R102	HRFT221JCA	R CHIP	1/10 220 OHM 2012
R103	HRFT101JCA	R CHIP	1/10 100 OHM 2012
R104	HRFT562JCA	R CHIP	1/10 5.6K OHM 2012
R105	HRFT302JCA	R CHIP	1/10 3K OHM 2012
R106	HRFT471JCA	R CHIP	1/10 470 OHM 2012
R107	HRFT270JCA	R CHIP	1/10 27 OHM 2012
R109	HRFT222JCA	R CHIP	1/10 2.2K OHM 2012
R111	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R112	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R117	RD-AZ751J-	R CARBON FILM	1/6 750 OHM J
R118	HRFT472JCA	R CHIP	1/10 4.7K OHM J 2012
R119	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012
R120	HRFT431JCA	R CHIP	1/10 430 OHM J 2012
R121	HRFT561JCA	R CHIP	1/10 560 OHM J 2012
R125	HRFT682JCA	R CHIP	1/10 6.8K OHM J 2012
22	PVPAJRS061	PCB PIF CHIP AS	DV-K444SY-AQ (97PC301900)
C113	CEXF1H229A	C ELECTRO	50V RSM 2.2MF (4X7) TP
C114	CEXF1E220V	C ELECTRO	25V RSM 22MF 6.3X7
C119	CEXF1C470A	C ELECTRO	16V RSM 47MF (5X7) TP
C120	CEXF1H229A	C ELECTRO	50V RSM 2.2MF (4X7) TP
C121	CEXF1H229A	C ELECTRO	50V RSM 2.2MF (4X7) TP
L102	5CPX109K--	COIL PEAKING	PL 1UH K (TAPPING)
L103	5CPX130K--	COIL PEAKING	13UH K (RADIAL)

REF.	PART CODE	PART NAME	PART DESCRIPTION
Q101	TZSR3197--	TR	KTC3197 (AUTO) (388A)
Q102	TZSR1004--	TR	KSR1004 (AUTO)
Q103	TZSR1004--	TR	KSR1004 (AUTO)
Q104	TZSR1004--	TR	KSR1004 (AUTO)
Q105	TZSR1004--	TR	KSR1004 (AUTO)
R198	RV5426203M	R SEMI FIXED	H20K-5X3-6Y-PC-MS
U101	97P651551A	PCB IF MODULE	197X164X1.6T/B (K444SY)

TABLE OF DIFFERENT PART LIST FOR PCB MAIN AS

1. A/V JACK OPTION (1PERI - 2 PERI)

LOC	1 PERI		2 PERI		REMARKS
	S/N	DESCRIPRION	S/N	DESCRIPRION	
B001	97P0716900	HI-PS (HB)	97P0717000	HI-PS (HB)	
C201			HCFK223ZCA	Y5V 50V 0.022MF Z2012	
C601			CEXF1C470A	16V RSM 47MF (5X7)	
C604			CEXF1H479A	50V RSM 4.7MF (4X7)	
C605			CEXF1H479A	50V RSM 4.7MF (4X7)	
C606			CEXF1H479A	50V RSM 4.7MF (4X7)	
C607	5CPX100J--	PL 10μH J (TAPPING)	CEXF1H479A	50V RSM 4.7MF (4X7)	
C608			CEXF1H479A	50V RSM 4.7MF (4X7)	
C609			HCBK103KCA	B 50V 0.01MF K 2012	
C612			HCFK223ZCA	Y5V 50V 0.022MF Z2012	
C613			CBZF1E223Z	0.022MF AXIAL	
C614	85801065GY	AWG22 1/0.65 TIN COAT	CBZF1E223Z	0.022MF AXIAL	
C615			HCFK223ZCA	Y5V 50V 0.022MF Z2012	
C619			HCLK471JCA	SL 50V 470PF J 2012	
C622	CEXF1A471V	10V RSS 470MF 8X11.5			
C625			CEXF1H479A	50V RSM 4.7MF (4X7)	
D604			DZZ13BL---	UZ-13BL	
D605			DZZ13BL---	UZ-13BL	
D610			DZZ5R6BM--	DZ5.6BM (AUTO)	
D611			DZZ5R6BM--	DZ5.6BM (AUTO)	
D612			DZZ5R6BM--	DZ5.6BM (AUTO)	
D613			DZZ5R6BM--	DZ5.6BM (AUTO)	
D618			DZZ5R6BM--	DZ5.6BM (AUTO)	
D619			DZZ5R6BM--	DZ5.6BM (AUTO)	
D620			DZZ5R6BM--	DZ5.6BM (AUTO)	
D621			DZZ5R6BM--	DZ5.6BM (AUTO)	
IC601			1BH7634AS	BH7634AS	
JK601	97P6313400	DSAM-9622			
JK602			97P6313300	DSAM-9621	
JP032	85801065GY	AWG22 1/0.65 TIN COAT			
JP035			85801065GY	AWG22 1/0.65 TIN COAT	
JP050	85801065GY	AWG22 1/0.65 TIN COAT			
JP204			85801065GY	AWG22 1/0.65 TIN COAT	
JP205			85801065GY	AWG22 1/0.65 TIN COAT	
JP206	85801065GY	AWG22 1/0.65 TIN COAT			
JP209			85801065GY	AWG22 1/0.65 TIN COAT	
JP210			85801065GY	AWG22 1/0.65 TIN COAT	
JP211			85801065GY	AWG22 1/0.65 TIN COAT	
JP212			85801065GY	AWG22 1/0.65 TIN COAT	
JP223	85801065GY	AWG22 1/0.65 TIN COAT			
JP225	85801065GY	AWG22 1/0.65 TIN COAT			
JP227	85801065GY	AWG22 1/0.65 TIN COAT			
JP231	85801065GY	AWG22 1/0.65 TIN COAT			
JP232	85801065GY	AWG22 1/0.65 TIN COAT			
L304	5CPX101J--	PL 100μH J (TAPPING)	5CPX100J--	PL 10μH J (TAPPING)	
L305			5CPX100J--	PL 10μH J (TAPPING)	

LOC	1 PERI		2 PERI		REMARKS
	S/N	DESCRIPRION	S/N	DESCRIPRION	
L601			5CPX229K--	2.2μH K (RADIAL)	
Q601			TZSR1002--	KSR1002 (AUTO)	
Q604			TZTC3198Y-	KTC3198Y- (AUTO)	
RJ14	HRF8000-EA	1/8 0 OHM J 3216			
RJ19	HRF8000-EA	1/8 0 OHM J 3216			
RJ36	HRF8000-EA	1/8 0 OHM J 3216			
RJ41			HRF8000-EA	1/8 0 OHM J 3216	
R010	HRFT222JCA	1/10 2.2K OHM J 2012	HRFT102JCA	1/10 1K OHM J 2012	
R351	HRFT101JCA	1/10 100 OHM J 2012			
R602			HRFT103JCA	1/10 10K OHM J 2012	
R605			RD-AZ912J-	1/6 9.1K OHM J	
R606			RD-AZ912J-	1/6 9.1K OHM J	
R608			HRFT750JCA	1/10 75 OHM J 2012	
R611			HRFT750JCA	1/10 75 OHM J 2012	
R612			RD-AZ151J-	1/6 150 OHM J	
R613			HRFT151JCA	1/10 150 OHM J 2012	
R620			HRFT101JCA	1/10 100 OHM J 2012	
R621			HRFT101JCA	1/10 100 OHM J 2012	
R622			RD-AZ273J-	1/6 27K OHM J	
R622			RD-AZ273J-	1/6 1K OHM J	

2. A/V JACK OPTION (1PERI - PHONO)

LOC	1 PERI		2 PERI		REMARKS
	S/N	DESCRIPRION	S/N	DESCRIPRION	
B001	97P0716900	HI-PS (HB)	97P0717000	HI-PS (HB)	
JK601	97P6313400	DSAM-9622			
JK603			97P6313600	DSAM-9240 (PHONO 4PIN)	

3. PDC/AUTOSET OPTION

LOC	1 PERI		2 PERI		REMARKS
	S/N	DESCRIPRION	S/N	DESCRIPRION	
C051			CEXF1C470V	16V RSS 47MF (5X11) TP	
C052			HCFK224ZCA	Y5V 50V 0.22MF Z2012	
C053			HCFK104ZCA	Y5V 50V 0.1MF Z2012	
C054			HCBK222KCA	50V X7R 2200PF K2012	
C055			HCFK333ZCA	Y5V 50V 0.033MF Z2012	
IC051			12HV5649--	SDA5649	
L051			5CPX100J--	PL 10μH J (TAPPING)	
R052			HRFT105JCA	1/10 1M OHM J 2012	
R053			HRFT104JCA	1/10 100K OHM J 2012	
R054			HRFT125JCA	1/10 1.2M OHM J 2012	
R055			HRFT682JCA	1/10 6.8K OHM J 2012	
R056			HRFT125JCA	1/10 1.2M OHM J 2012	
R057			HRFT682JCA	1/10 6.8K OHM J 2012	

4. HEAD OPTIONS

LOC MODEL	PAL 4HD	PAL 2HD SP	PAL 2HD LP	SECAM 4HD	SECAM 2HD
C311	HCLK391JCA SL 50V 390PF J 2012	HCLK361JCA SL 50V 360PF J 2012	HCLK361JCA SL 50V 360PF J 2012	HCLK391JCA SL 50V 390PF J 2012	HCLK361JCA SL 50V 360PF J 2012
C351	–	HCLK200JCA SL 50V 20PF J 2012	HCLK200JCA SL 50V 20PF J 2012	–	HCLK200JCA SL 50V 20PF J 2012
C401	HCBK103KCA 50V X7R 0.01MF K 2012	–	–	HCBK103KCA 50V X7R 0.01MF K 2012	–
C410	HCFK104ZCA 50V Y5V 0.1MF K 2012	–	–	HCFK104ZCA 50V Y5V 0.1MF K 2012	–
C414	HCBK103KCA 50V X7R 0.01MF K 2012	–	–	HCBK103KCA 50V X7R 0.01MF K 2012	–
IC401	1LA70011-- LA70011	1LA70011-- LA70011	1LA70011-- LA70011	1LA70011-- LA70011	1LA70011-- LA70011
P401	97P6389620 00-8370-071-000-800	97P6289520 00-8370-041-000-800	97P6289520 00-8370-041-000-800	97P6389620 00-8370-071-000-800	97P6289520 00-8370-041-000-800
R302	HRFT112JCA 1/10 1.1K OHM J 2012	HRFT112JCA 1/10 1.1K OHM J 2012	HRFT112JCA 1/10 1.1K OHM J 2012	HRFT112JCA 1/10 1.1K OHM J 2012	HRFT112JCA 1/10 1.1K OHM J 2012
R306	HRFT272JCA 1/10 2.7K OHM J 2012	HRFT272JCA 1/10 2.7K OHM J 2012	HRFT242JCA 1/10 2.4K OHM J 2012	HRFT152JCA 1/10 1.5K OHM J 2012	HRFT242JCA 1/10 2.4K OHM J 2012
R401	RD-AZ102J- 1/10 1K OHM J 2012	–	–	RD-AZ102J-	–
R402	HRFT242JCA 1/10 2.4K OHM J 2012	HRFT152JCA 1/10 1.5K OHM J 2012	HRFT202JCA 1/10 2K OHM J 2012	HRFT242JCA 1/10 2.4K OHM J 2012	HRFT202JCA 1/10 2K OHM J 2012
R405	HCBK471KCA 1/10 470 OHM J 2012	–	–	HCBK471KCA 1/10 470 OHM J 2012	–
R411	HRFT561JCA 1/10 560 OHM J 2012	HRFT102JCA 1/10 1K OHM J 2012	HRFT621JCA 1/10 620 OHM J 2012	HRFT102JCA 1/10 1K OHM J 2012	HRFT681JCA 1/10 680 OHM J 2012
R5A1	–	HCLK103JCA 1/10 10K OHM J 2012	HCLK103JCA 1/10 10K OHM J 2012	–	HCLK103JCA 1/10 10K OHM J 2012
R5A2	–	HCLK103JCA 1/10 10K OHM J 2012	HCLK103JCA 1/10 10K OHM J 2012	–	HCLK103JCA 1/10 10K OHM J 2012
R501	HRFT133JCA 1/10 13K OHM J 2012	HRFT752JCA 1/10 7.5K OHM J 2012	HRFT472JCA 1/10 4.7K OHM J 2012	HRFT223JCA 1/10 22K OHM J 2012	HRFT472JCA 1/10 4.7K OHM J 2012

5. SYSTEM OPTION

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
B001B	–	–	–	–	97P0974800 SUS304 CSP T0.2
C174	HCBK123KCA 50V X7R 0.012MF K 2012	HCBK123KCA 50V X7R 0.012MF K 2012	HCBK153KCA 50V X7R 0.015MF K 2012	HCBK123KCA 50V X7R 0.012MF K 2012	HCBK222KCA 50V X7R 2200MF K 2012
C178	–	–	–	–	HCLK471JCA 50V SL 470PF J 2012
C179	–	–	–	–	HCLK471JCA 50V SL 470PF J 2012
C180	CBZP103M 16V Y5S 0.01MF M (AXI)	CBZP103M 16V Y5S 0.01MF M (AXI)	–	CBZP103M 16V Y5S 0.01MF M (AXI)	CBZP103M 16V Y5S 0.01MF M (AXI)
C181	CBZP103M 16V Y5S 0.01MF M (AXI)	CBZP103M 16V Y5S 0.01MF M (AXI)	–	CBZP103M 16V Y5S 0.01MF M (AXI)	CBZP103M 16V Y5S 0.01MF M (AXI)

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
C195	CEXF1H229A 50V RSM 2.2MF (4X7) TP	CEXF1H229A 50V RSM 2.2MF (4X7) TP	CEXF1H229A 50V RSM 2.2MF (4X7) TP	CEXF1H229A 50V RSM 2.2MF (4X7) TP	CEXF1H100A 50V RSM 10MF (5X7) TP
C304	HCFK223KCA 50V Y5V 0.022MF Z 2012	HCFK223KCA 50V Y5V 0.022MF Z 2012	HCFK223KCA 50V Y5V 0.022MF Z 2012	HCFK223KCA 50V Y5V 0.022MF Z 2012	–
C354	–	–	–	–	HCFK223KCA 50V Y5V 0.022MF Z 2012
C361	–	–	–	–	HCBK103KCA 50V X7R 0.01MF Z 2012
C362	–	–	–	–	HCFK104ZCA 50V Y5V 0.1MF Z 2012
C363	–	–	–	–	HCFK104ZCA 50V Y5V 0.1MF Z 2012
C364	–	–	–	–	HCQK150JCA 50V CH 15PF J 2012
C365	–	–	–	–	HCBK103KCA 50V X7R 0.01MF Z 2012
C366	–	–	–	–	CEXF1C470A 16V RSM 47MF (5X7) TP
C367	–	–	–	–	HCLK101JCA 50V SL 100PF J 2012
C368	–	–	–	–	HCLK101JCA 50V SL 100PF J 2012
C369	–	–	–	–	CEXF1H229A 50V RSM 2.2MF (4X7) TP
C370	–	–	–	–	HCFK333ZCA Y5V 50V 0.033MF Z 2012
C371	–	–	–	–	CBZP1C103M 16V Y5S 0.01MF M (AXI)
C372	–	–	–	–	CBZP1C103M 16V Y5S 0.01MF M (AXI)
C373	–	–	–	–	CEXF1C470A 16V RSM 47MF (5X7) TP
C374	–	–	–	–	HCBK103KCA 50V X7R 0.01MF Z 2012
C375	–	–	–	–	CEXF1H109A 50V RSM 1MF (4X7) TP
C376	–	–	–	–	HCFK473ZCA 50V X7R 0.047MF Z 2012
C377	–	–	–	–	CBZP1C103M 16V Y5S 0.01MF M (AXI)
C378	–	–	–	–	CEXF1H109A 50V RSM 1MF (4X7) TP
C379	–	–	–	–	HCFK473ZCA 50V X7R 0.047MF Z 2012
C380	–	–	–	–	HCBK103KCA 50V X7R 0.01MF K 2012
C381	–	–	–	–	CBZP1C103M 16V Y5S 0.01MF M (AXI)
C382	–	–	–	–	HCBK103KCA 50V X7R 0.01MF K 2012

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
C383	–	–	–	–	CEXF1H109A 50V RSM 1MF (4X7) TP
C384	–	–	–	–	HCBK103KCA 50V X7R 0.01MF K 2012
C555	HCLK101JCA SL 50V 100PF J 2012	HCLK101JCA SL 50V 100PF J 2012	HCLK101JCA SL 50V 100PF J 2012	HCLK101JCA SL 50V 100PF J 2012	–
C620	–	–	HCLK471JCA 50V SL 470PF J 2012	–	–
C626	–	–	–	–	HCLK680JCA 50V SL 68PF J 2012
C628	–	–	–	–	HCLK220JCA 50V SL 22PF J 2012
C629	–	–	–	–	HCQK100JCA 50V CH 10PF J 2012
D172	DZZ5R6BM-- DZ 5.6BM (AUTO)	DZZ5R6BM-- DZ 5.6BM (AUTO)	DZZ5R6BM-- DZ 5.6BM (AUTO)	DZZ5R6BM-- DZ 5.6BM (AUTO)	–
D506	–	–	–	–	DZN4148--- IN4148 AUTO 52MM
IC361	–	–	–	–	ITA1238-- TA1238N
IC501					
JP010	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP016	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP027	85801065GY AWG22 1/0.65 TIN COAT	85801065GY AWG22 1/0.65 TIN COAT	–	85801065GY AWG22 1/0.65 TIN COAT	85801065GY AWG22 1/0.65 TIN COAT
JP041	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP061	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP063	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP077	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP109	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP164	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP230	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP233	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
JP234	–	–	–	–	85801065GY AWG22 1/0.65 TIN COAT
L195	–	–	–	–	5CPX100J-- PL 10UH J (TAPPING)
L361	–	–	–	–	5CPX100J-- PL 10UH J (TAPPING)

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
L362	–	–	–	–	5CPX100J-- PL 10UH J (TAPPING)
L605	–	–	–	–	5CPX229K-- 2.2UH K (RADIAL)
Q171	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q172	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q173	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q174	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q175	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q176	–	–	TZSR2001-- KSR2001 (AUTO)	–	–
Q196	–	–	–	–	TZSR1001- KSR1001 (AUTO)
Q197	–	–	–	–	TZTA1273Y- KTA1273Y (966Y)
Q361	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q362	–	–	–	–	TZSR1004- KSR1004 (AUTO)
Q363	–	–	–	–	TZTA1266Y- KTC1266Y (AUTO) (1015Y)
Q364	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q365	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q366	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q367	–	–	–	–	TZSR1004- KSR1004 (AUTO)
Q368	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q369	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
Q370	–	–	–	–	TZTC3198Y- KTC3198Y (1815Y) (AUTO)
RF101	97P7607400 ALTMI-BG1 (PAL-B/G)	97P7607500 ALTMI-DK1 (PAL-BG/DK)	97P7607600 ALTMI-UK1 (PAL-I)	97P7607700 ALTMI-II1 (PAL-I/I)	–
RF102	–	–	–	–	97P7607800 ALTM-SL1 (SECAM-L)
RJ11	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	–
RF15	–	–	–	–	HRF8000-EA 1/8 0 OHM 3216
RF42	–	–	–	–	HRF8000-EA 1/8 0 OHM 3216

MODEL LOC	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
RJ43	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	HRF8000-EA 1/8 0 OHM 3216	–
R173	HRFT362JCA 1/10 3.6K OHM J 2012	HRFT362JCA 1/10 3.6K OHM J 2012	HRFT272JCA 1/10 2.7K OHM J 2012	HRFT362JCA 1/10 3.6K OHM J 2012	HRFT332JCA 1/10 3.3K OHM J 2012
R189	HRFT333JCA 1/10 33K OHM J 2012	HRFT333JCA 1/10 33K OHM J 2012	HRFT333JCA 1/10 33K OHM J 2012	HRFT333JCA 1/10 33K OHM J 2012	HRFT103JCA 1/10 10K OHM J 2012
R190	HRFT563JCA 1/10 56K OHM J 2012	HRFT563JCA 1/10 56K OHM J 2012	HRFT563JCA 1/10 56K OHM J 2012	HRFT563JCA 1/10 56K OHM J 2012	HRFT243JCA 1/10 24K OHM J 2012
R191	–	–	–	–	RD-AZ621J- 1/6 620 OHM J
R192	HRFT750JCA 1/10 75 OHM J 2012	HRFT750JCA 1/10 75 OHM J 2012	HRFT750JCA 1/10 75 OHM J 2012	HRFT750JCA 1/10 75 OHM J 2012	HRFT471JCA 1/10 470 OHM J 2012
R193	–	–	–	–	HRFT203JCA 1/10 20K OHM J 2012
R194	–	–	–	–	HRFT203JCA 1/10 20K OHM J 2012
R195	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R196	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R197	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R361	–	–	–	–	RD-AZ102J- 1/6 1K OHM J
R362	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R363	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R364	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R365	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R366	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R367	–	–	–	–	RD-AZ472J- 1/6 4.7K OHM J
R368	–	–	–	–	HRFT103JCA 1/10 10K OHM J 2012
R369	–	–	–	–	HRFT202JCA 1/10 2K OHM J 2012
R370	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R371	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R372	–	–	–	–	HRFT183JCA 1/10 18K OHM J 2012
R373	–	–	–	–	HRFT333JCA 1/10 33K OHM J 2012
R374	–	–	–	–	HRFT222JCA 1/10 2.2K OHM J 2012

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
R376	–	–	–	–	HRFT202JCA 1/10 2K OHM J 2012
R377	–	–	–	–	HRFT202JCA 1/10 2K OHM J 2012
R378	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R379	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R380	–	–	–	–	HRFT102JCA 1/10 1K OHM J 2012
R381	–	–	–	–	HRFT471JCA 1/10 470 OHM J 2012
R382	–	–	–	–	RD-AZ102J- 1/6 1K OHM J
R383	–	–	–	–	RD-AZ102J- 1/6 1K OHM J
X361	–	–	–	–	5XJ4R286UC HC-49/S 4.286MHZ 20PPM
Z361	–	–	–	–	5PDEQ0484- DELAY EQ 400NS

6. EMC OPTIONS

LOC MODEL	PAL-B/G	PAL-BG/DK	PAL-I	PAL-I/I	SECAM-L
C619	–	HCLK471JCA 50V SL 470PF J 2012	–	HCLK471JCA 50V SL 470PF J 2012	–
C619	–	HCLK471JCA 50V SL 470PF J 2012	–	–	–
JP232	–	–	85801065GY AWG22 1/0.65 TIN COAT	–	–
L601	5CPX228M-- 0.22UH 5MM M RADIAL	5CPX228M-- 0.22UH 5MM M RADIAL	–	5CPX228K-- 2.2UH K (RADIAL)	5CPX228K-- 2.2UH K (RADIAL)
L603	5CPZ100K02 10UH K (AXIAL 3.5MM)	5CPZ229K02 LAL02TB 2.2UH M AXIAL	5CPZ100K02 10UH K (AXIAL 3.5MM)	5CPZ220K02 2.2UH K (RADIAL)	5CPZ220K02 2.2UH K (RADIAL)
L604	–	5CPZ229K02 LAL02TB 2.2UH M AXIAL	–	5CPZ220K02 2.2UH K (RADIAL)	5CPZ220K02 2.2UH K (RADIAL)

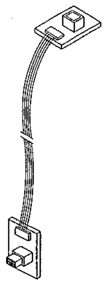
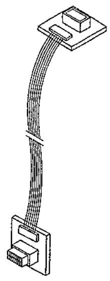
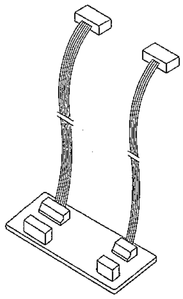
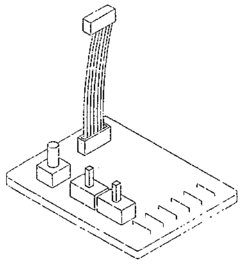
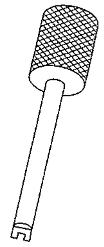
7. POWER OPTION (230V ONLY - FREE VOLTAGE)

LOC	BAIC (230V ONLY)		FREE VOLTAGE		REMARKS
	S/N	DESCRIPRION	S/N	DESCRIPRION	
0M801	PVPWSWD445	K444DY-AQ	PVPWSWD466	K484DY-RG/F	
C805	CH1TFE222M	0KV 2200PF M AD AC250	CH1TFB101K	4.0KV 100PF K AD AC250	
C807	CEXF2G470V	400V RSS 47MF 16X35	CEXN2G820P	400V LHS 82MF	
D817	DZZ3R9B---	DZ 3R9B (3R9) (AUTO)	DZZ7R5BM--	UZ-7.5BM	
D819	–	–	DZA7160A--	MA7160-A	
	–	–	DRD16FB2--	RD16FB2	REPLACEMENT
JP147	85801065GY	WG22 1/0.65 TIN COATIN	DZZ3R9B---	DZ 3R9B (3R9) (AUTO)	
R701	RD-4Z279J-	1/4 2.7 OHM J	RD-4Z200J-	1/4 20 OHM J	PCB LOGIC AXIAL AS

SECTION 13. SERVICE JIG CONNECTION METHODS

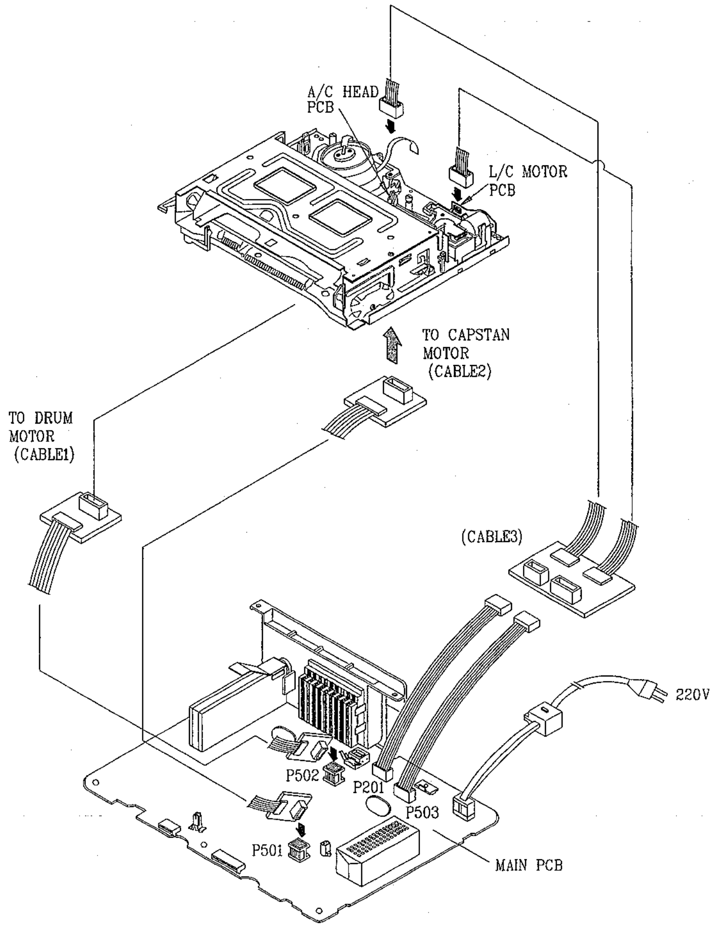
THE SERVICE FIXTURE

FIXTURE ITEM	DESCRIPTION	P/N
Extension Cable 1	Use for K mecha Drum Motor Connection Cable	97PB400100
Extension Cable 2	Use for K mecha Capstan Motor Connection Cable	97PB400200
Extension Cable 3	Use for K mecha A/C head and L/C Motor Connecting Cable	97PB400300
Path Adj Fixture	Use for X-position adjust Tape path alignment	97PB396000
Special Driver	Use for X-position adjust Tape path alignment	

Cable 1	Cable 2	Cable 3	Path Adj Fixture	Special Driver
				

NOTE : If cable 1, cable 2 and cable 3 are not available, you can do a repair by selecting No. 2. EE MODE WITHOUT DECK MODE, and No. 3. ERROR CHECK MODE in SVC MODE FOR REPAIR as the same effect without those(see page 59).

EXTENSION CABLE CONNECTION

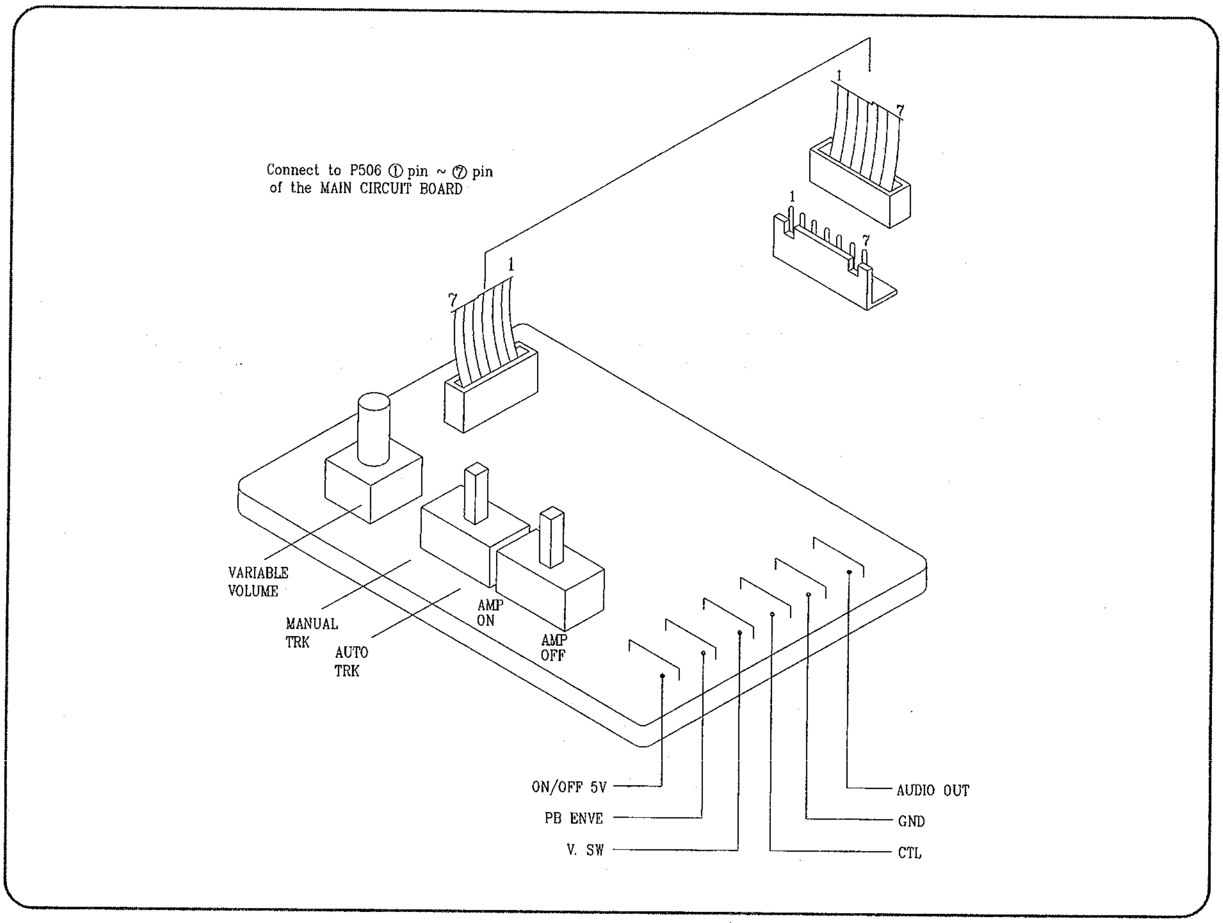

A/C HEAD PCB
L/C MOTOR PCB
TO CAPSTAN MOTOR (CABLE2)
TO DRUM MOTOR (CABLE1)
(CABLE3)
220V
P502
P201
P503
P501
MAIN PCB

NOTE : How to executing the unit in the service mode

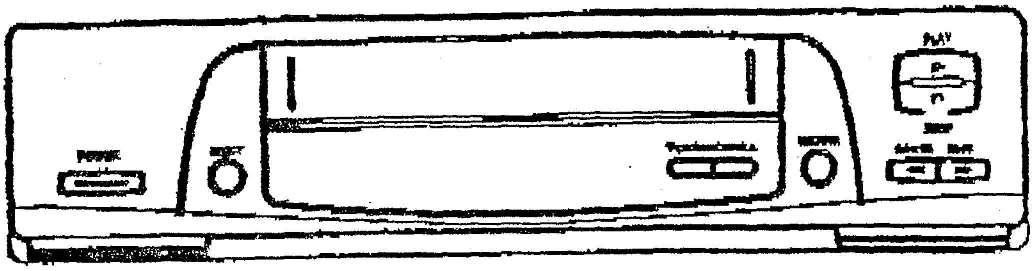
1) Press the [MENU] button to go to [MAIN MENU] screen and press the number 484 in sequence then go to [SERVICE MODE] screen.
2) Press the number 1 button to call the [SVC MODE FOR REPAIR] screen.
3) Press the number 1 button to call the [DECK JIG CONNECTION MODE(ON)].

PATH FIXTURE CONNECTION/TEST POINT IDENTIFICATION

Refer to the adjustment of the tape transporting system


Connect to P506 ① pin ~ ⑦ pin
of the MAIN CIRCUIT BOARD
1
7
1
7
7
1
VARIABLE
VOLUME
MANUAL
TRK
AUTO
TRK
AMP
ON
AMP
OFF
ON/OFF 5V
PB ENVE
V. SW
AUDIO OUT
GND
CTL

Ergänzung / Abgleich



Service Manual
Mechanik

SEG®

VCR 4100/3100/2100

und Baugleiche

DAEWOO

DAEWOO ELECTRONICS CO., LTD.

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1. DESCRIPTION OF THE MECHANISM

1. CHARACTERISTIC OF THE FM-DECK MECHANISM

1) FM-MECHA DECK follows the VHS standard and NTSC/PAL standard.
2) FM-MECHA DECK has 3 motors (DRUM MOTOR, CAPSTAN MOTOR and L/C MOTOR).
3) FM-MECHA DECK uses L/C MOTOR to drive FRONT LOADING.
4) FM-MECHA DECK has 8 MODES (EJECT/H.REW/INITIAL/IDLE/REV/SLOW/PLAY/FF & REW) and each mode is composed of 4 bit mode Signals and realized by the mode switch which is driven by the L/C MOTOR.
5) FM-MECHA uses the FULL LOADING system in which mode shifting time (especially, picture appearing time) is short (the tape always wrapped around the DRUM).
6) FM-MECHA DECK has the high speed rewind function.
7) FM-MECHA DECK is removed the DECK PCB and connected to MAIN PCB by using the B to B TYPE CONNECTOR.

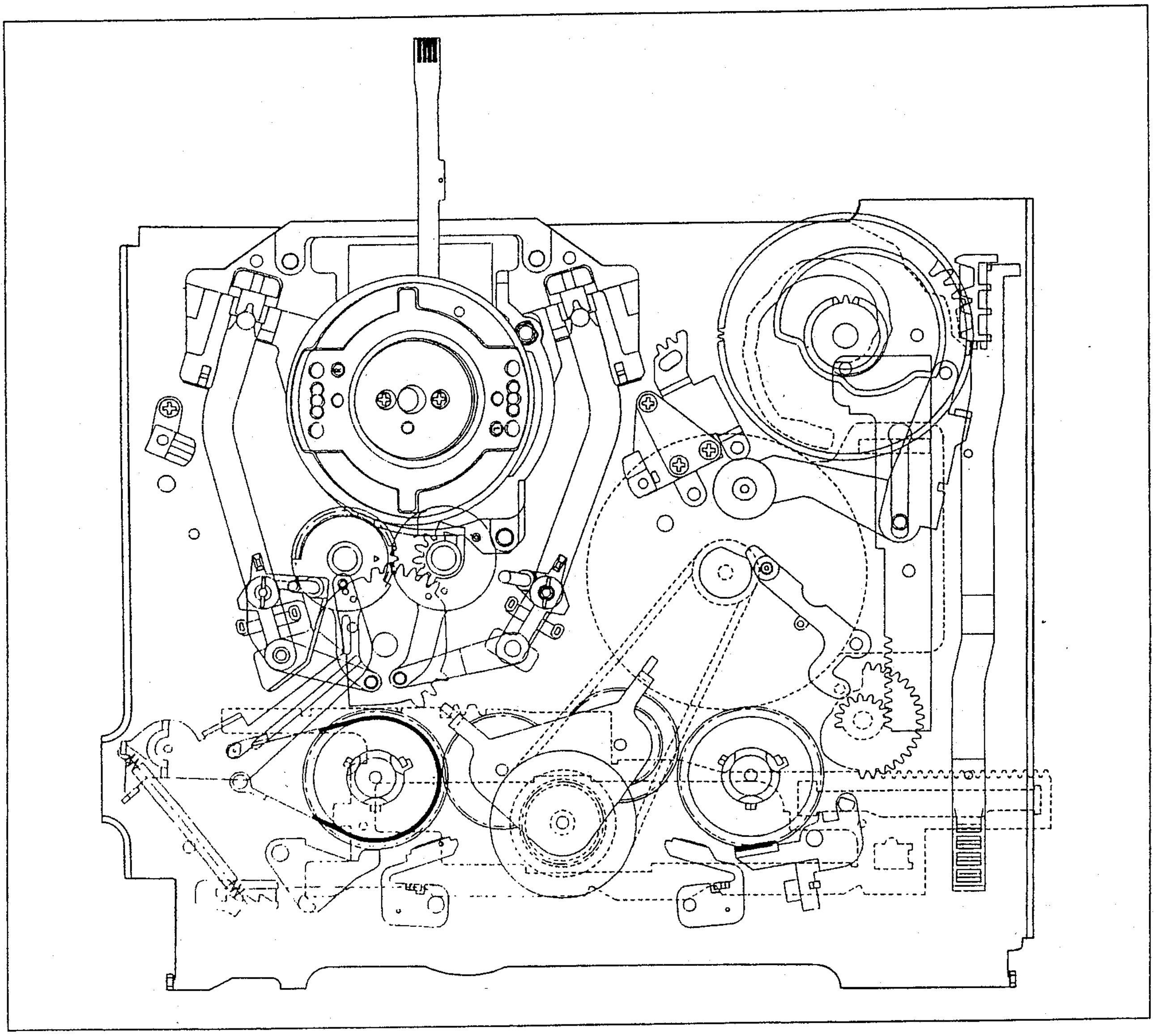
2. DESCRIPTION OF THE MODE

1) EJECT MODE

A. In this mode, the cassette In/Out operation is performed by the CW/CCW rotation of the L/C motor to which the Front Loading driving parts are directly related.

- CASSETTE IN : If the cassette is inserted into the entrance with proper insertion force, Mode Switch is rotated by insertion force and break from Eject mode. At the same time the Cassette In is detected. And instantely the cassette loading is performed and the L/C motor proceeds to the PLAY/STOP mode.
- CASSETTE OUT: In this state the Cassette Holder is located at the enterance of the front panel, and only the Cassette In operation can be excuted.

B. Mechanical Arrangement
  a. The BAND BRAKE is released from the S REEL TABLE.
  b. The S & T MAIN BRAKE is released from the S & T REEL TABLE.
  c. The S & T SUB BRAKE is released from the S & T REEL TABLE.
  d. The IDLER GEAR is separated from the S & T REEL TABLE.



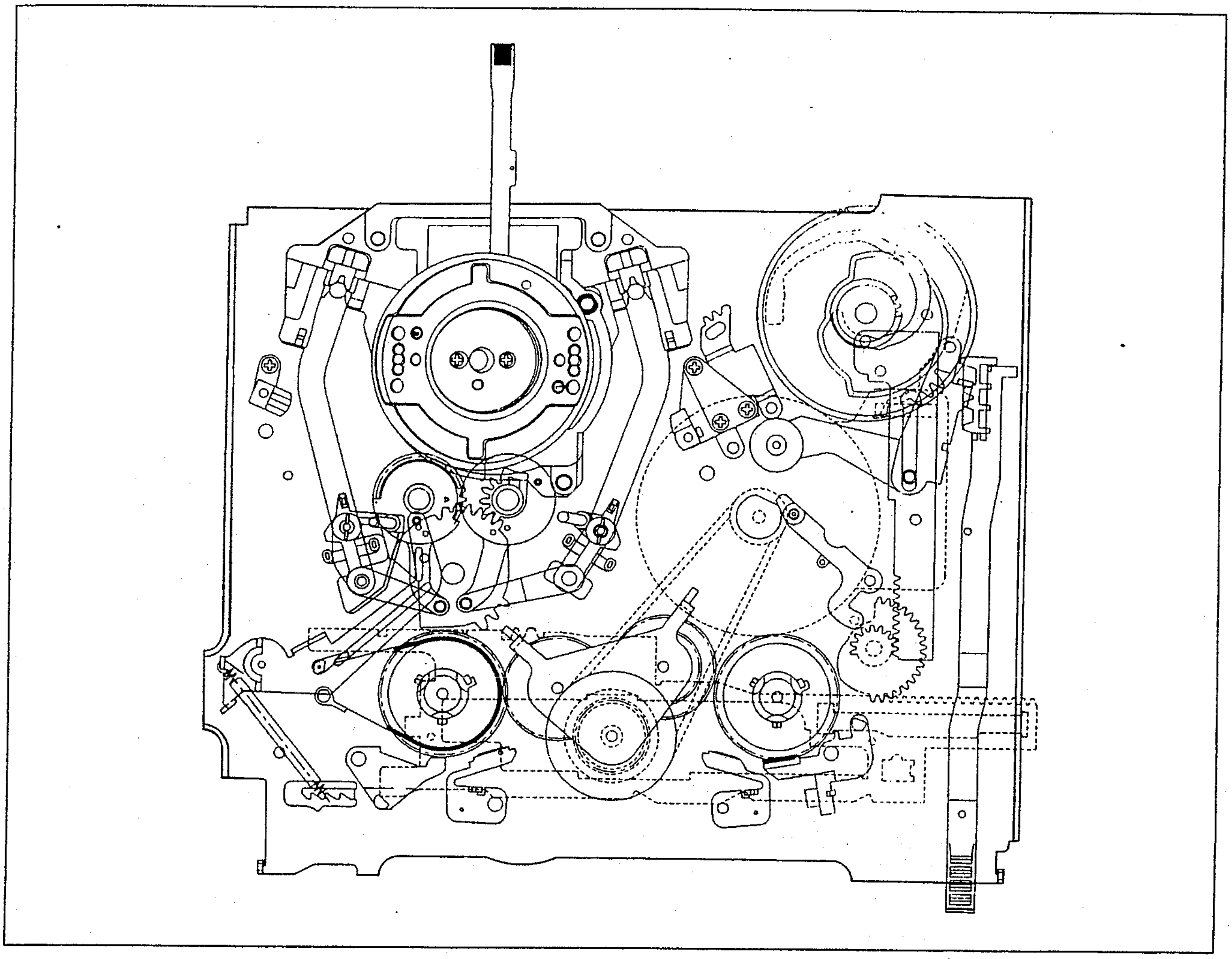
EJECT MODE

2) H. REW MODE

A. In this mode, the cassette tape is rewoud at the high speed.

B. Mechanical Arrangement

a. The S & T POLE BASE AS is shifted to its predetermined position.
b. The BAND BRAKE is released from the S REEL TABLE.
c. The S & T MAIN BRAKE is released from the S & T REEL TABLE.
d. The S & T SUB BRAKE is released from the S & T REEL TABLE.

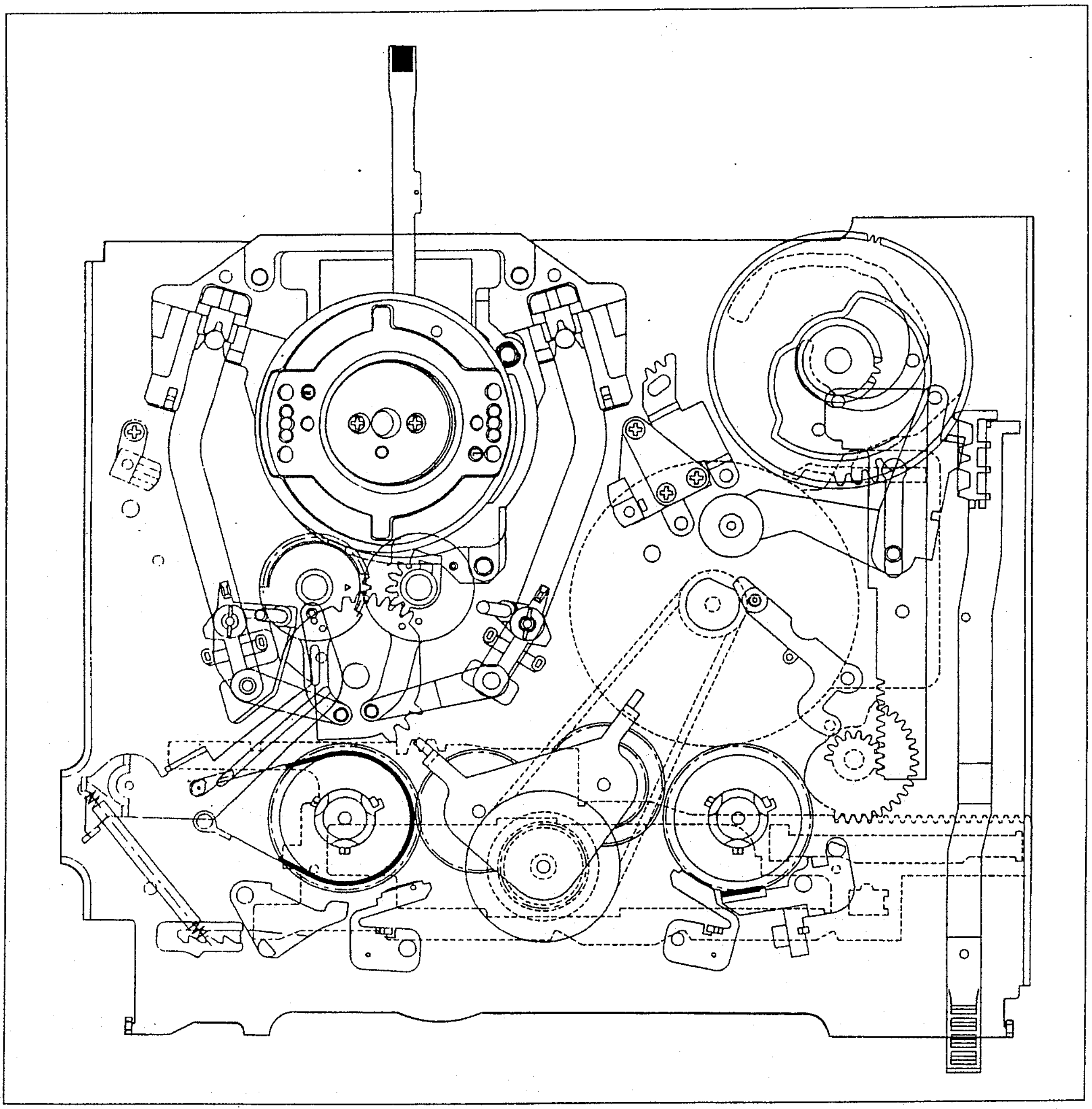


H.REW MODE

3) INITIAL MODE

A. The INITIAL MODE is existed between H.REW MODE and LOADING MODE. This mode is used as a reference mode for unloading location when power is off and used to prevent looseness of tape when H. REW is ended.

B. Mechanical Arrangement
  a. The BAND BRAKE is released from the S REEL TABLE.
  b. The S MAIN BRAKE is released from the S REEL TABLE.
  c. The T MAIN BRAKE is applied to the T REEL TABLE.
  d. The S & T BRAKE is released from the S & T REEL TABLE.

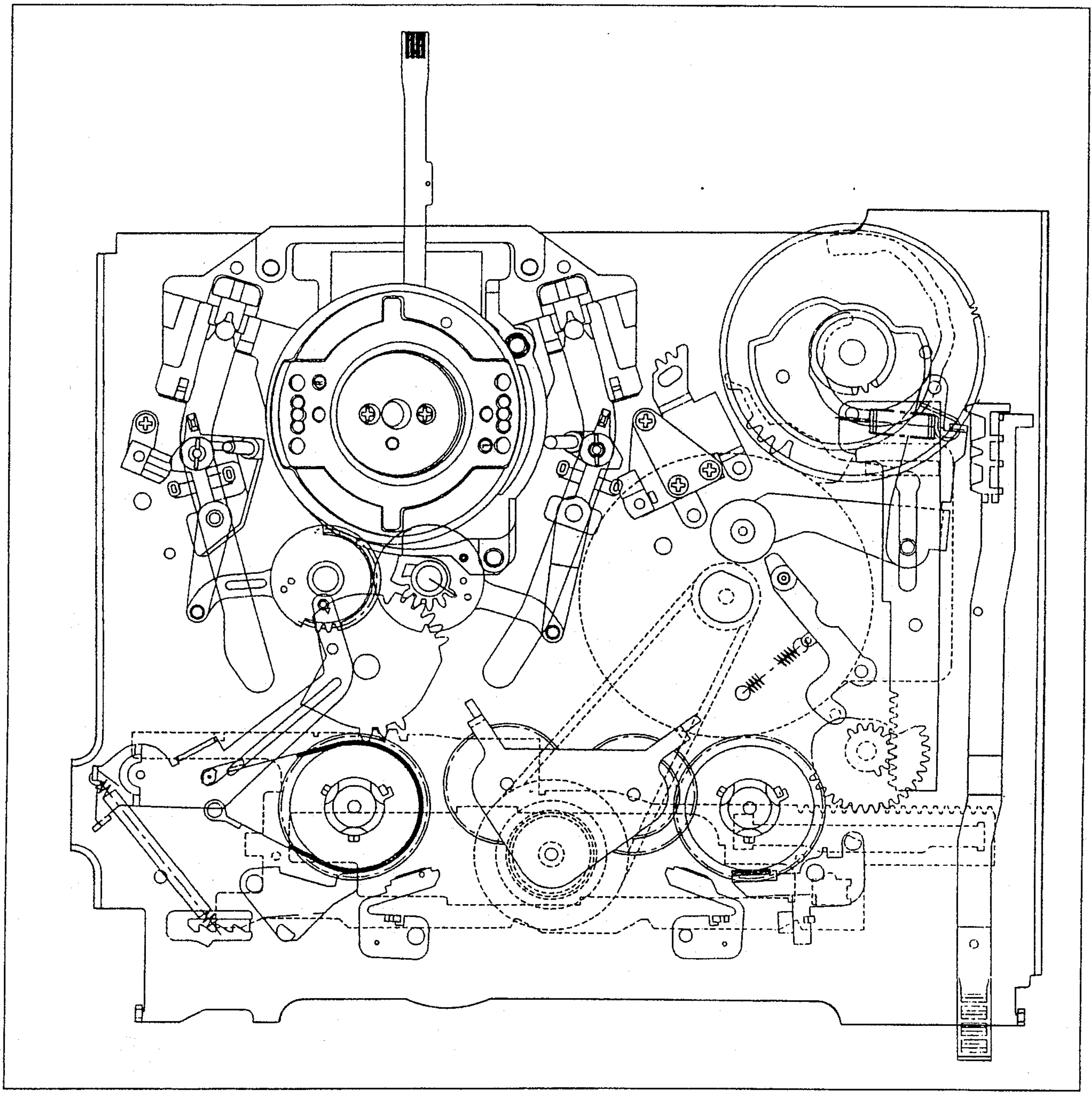


INITIAL MODE

4) LOADING SECTION

A. LOADING SECTION is used to lead a tape to either transporting situation or initial situation by forwarding and backwarding of POLE BASE AS.

B. Mechanical Arrangement
  a. The BAND BRAKE is released from the S REEL TABLE.
  b. The S & T MAIN BRAKE is released from the S & T REEL TABLE.
  c. The S & T SUB BRAKE is applied to the S & T REEL TABLE.
  d. The IDLE GEAR is separated from the S & T REEL TABLE.

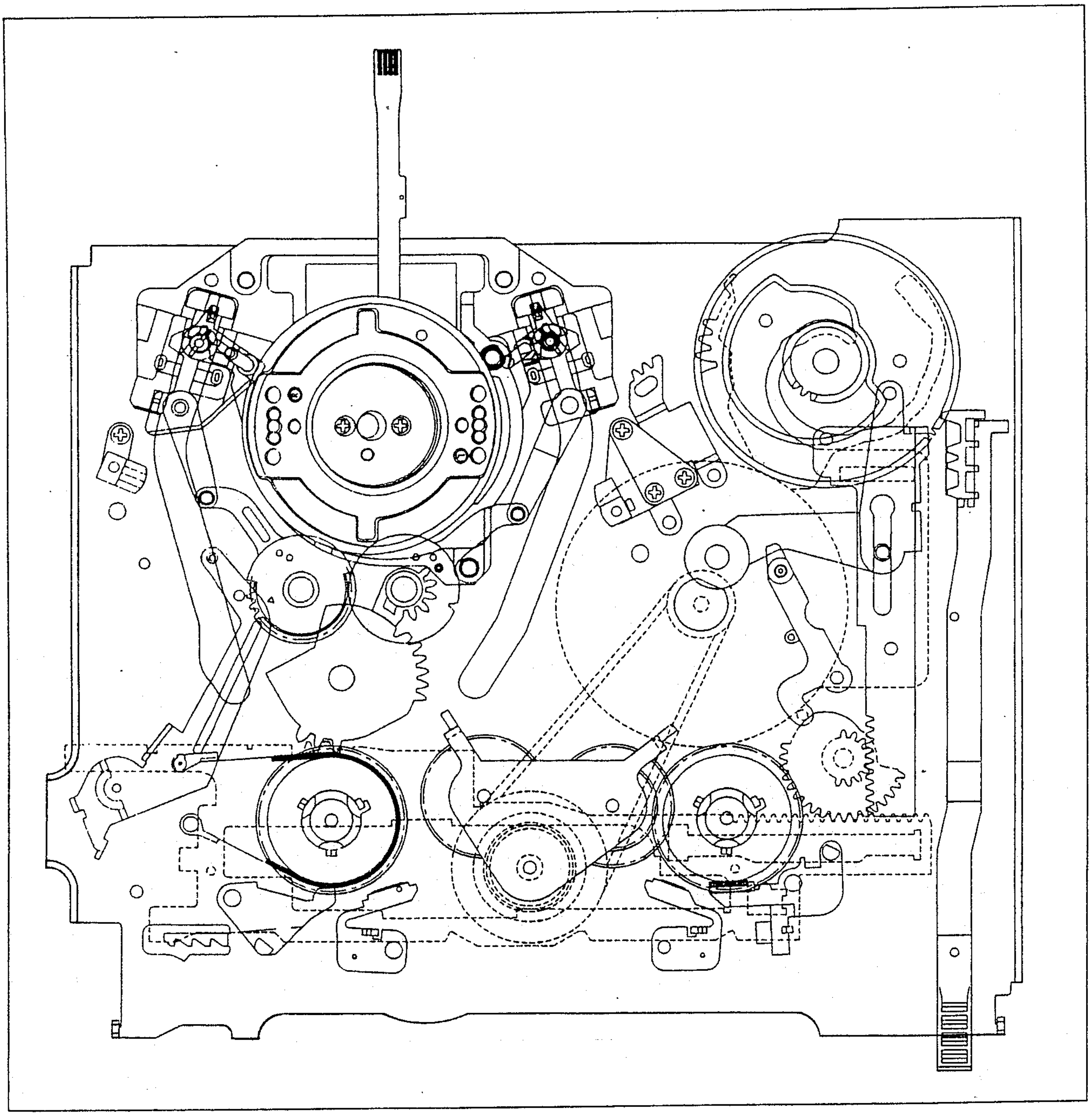


LOADING MODE

IDLE MODE

Idle mode is used to reduce the tape tension and load in drum and posts which are used for tape transportation by seperating PINCH ROLLER from CAPSTAN SHAFT when DECK is performed from forward tape running to backward tape running or from backward tape running to forward tape running.

Mechanical Arrangement
a. The S & T MAIN BRAKE is released from the S & T REEL TABLE.
b. The S & T SUB BRAKE is applied to the S & T REEL TABLE.
C. The PINCH ROLLER is separated from the CAPSTAN SHAFT.

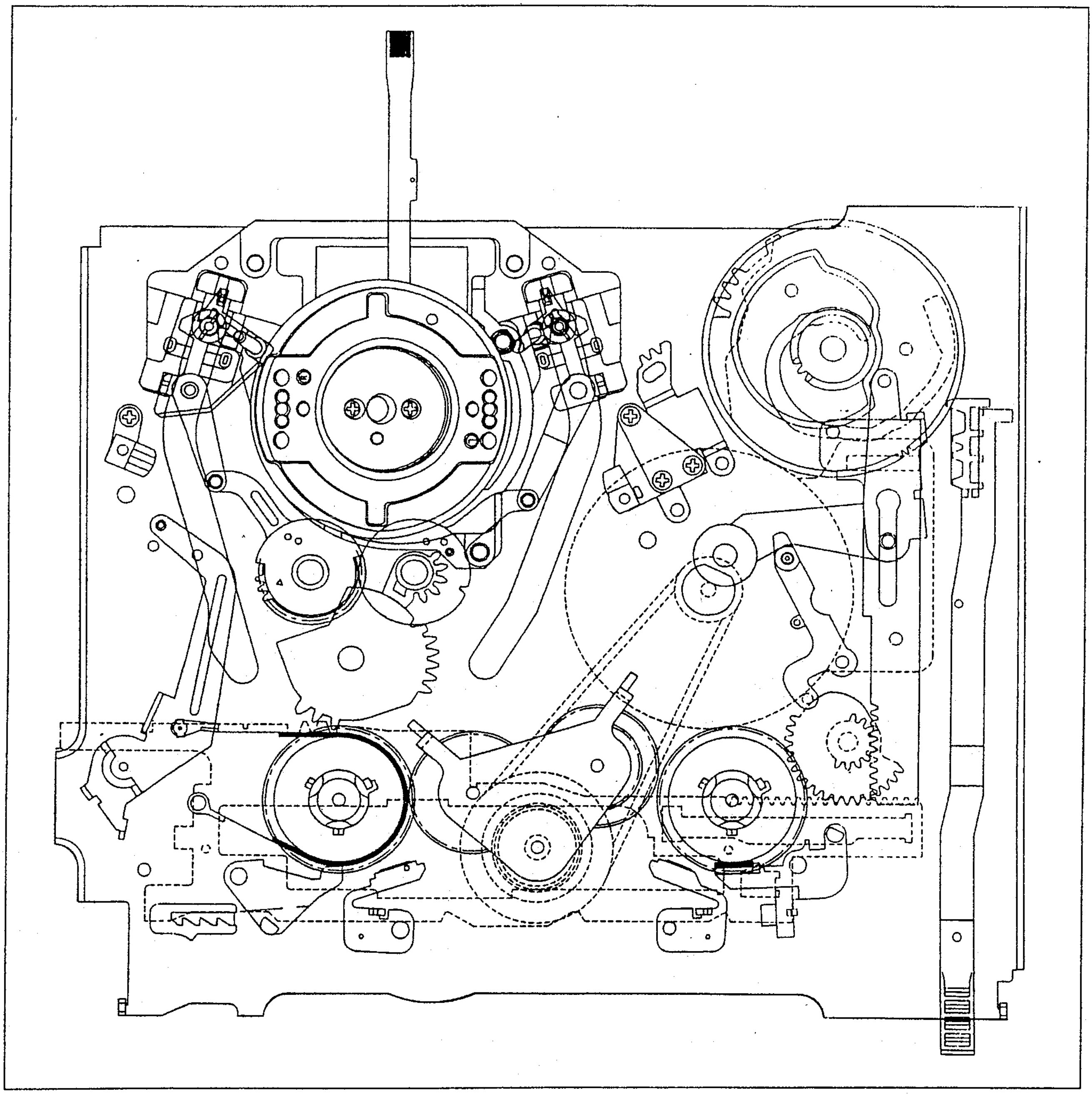


IDLE MODE

6) REVIEW MODE

A. The Review Search operation is performed in this mode. This mode is obtained by pressing the REW button in the state of playing. The L/C motor rotated until the Cam switch detects the REVIEW mode. When the Cam switch detects the REVIEW mode, the L/C motor is stopped and at the nearly time the Capstan starts to rotate CCW to transport the tape reversely.

B. Mechanical Arrangement
   a. The BAND BRAKE is released from the S REEL TABLE.
   b. The S & T MAIN BRAKE are released from the S & T REEL TABLE.
   c. The S SUB BRAKE is applied to the S REEL TABLE.
   d. The PINCH ROLLER is applied to the CAPSTAN SHAFT to transport the tape reversely.
   e. The REVIEW ARM is moved forward to perform the role of the tape transporting POST.

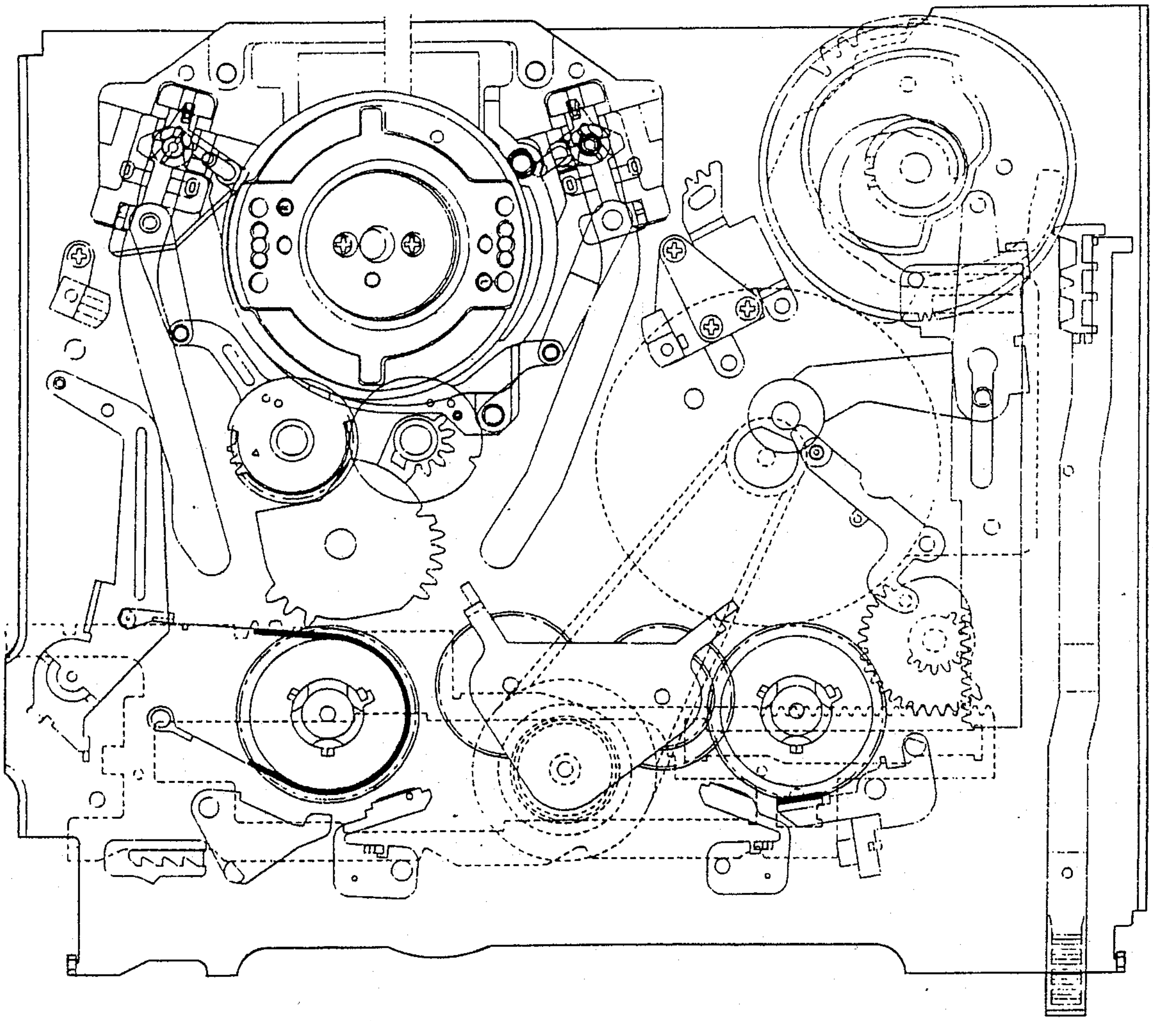


REVIEW MODE

7) SLOW MODE

A. This mode is performed the forward and backward slow searching.

B. Mechanical Arrangement
  a. The BAND BRAKE is applied to the S REEL TABLE.
  b. The S & T MAIN BRAKE is released from the S & T REEL BRAKE.
  c. The S & T SUB BRAKE is released from the S & T REEL TABLE.
  d. The REVIEW ARM is located at the initial position.
  e. The CAPSTAN BRAKE is applied to the CAPSTAN MOTOR.

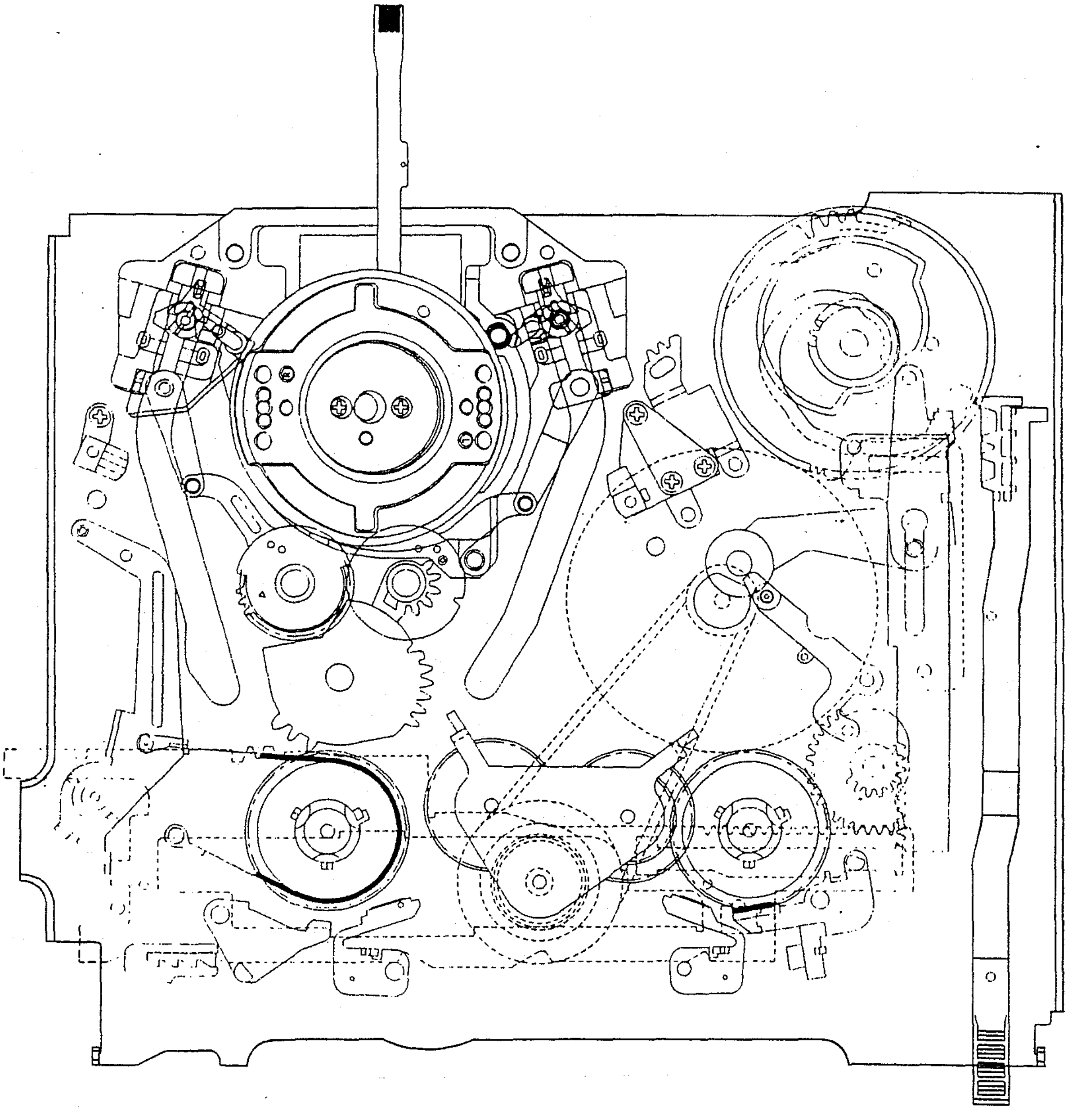


F/R SLOW MODE

8) PLAY/RECORD/STOP MODE

A. The PLAY/RECORD/STOP mode transport the tape from the S REEL TABLE to the T REEL TABLE in the regular speed to perform the recording and playback. Also this mode is to STAND-BY the next operation of key-in.

B. Mechanical Arrangement
   a. The TENTION POLE is located at the appointed position.
   b. The BAND BRAKE is applied to the S REEL TABLE for excute the tape tension servo.
   c. The S & T MAIN BRAKE ans S & T SUB BRAKE is released from the S & T REEL TABLE.
   d. The PINCH ROLLER is applied to the CAPSTAN MOTOR.

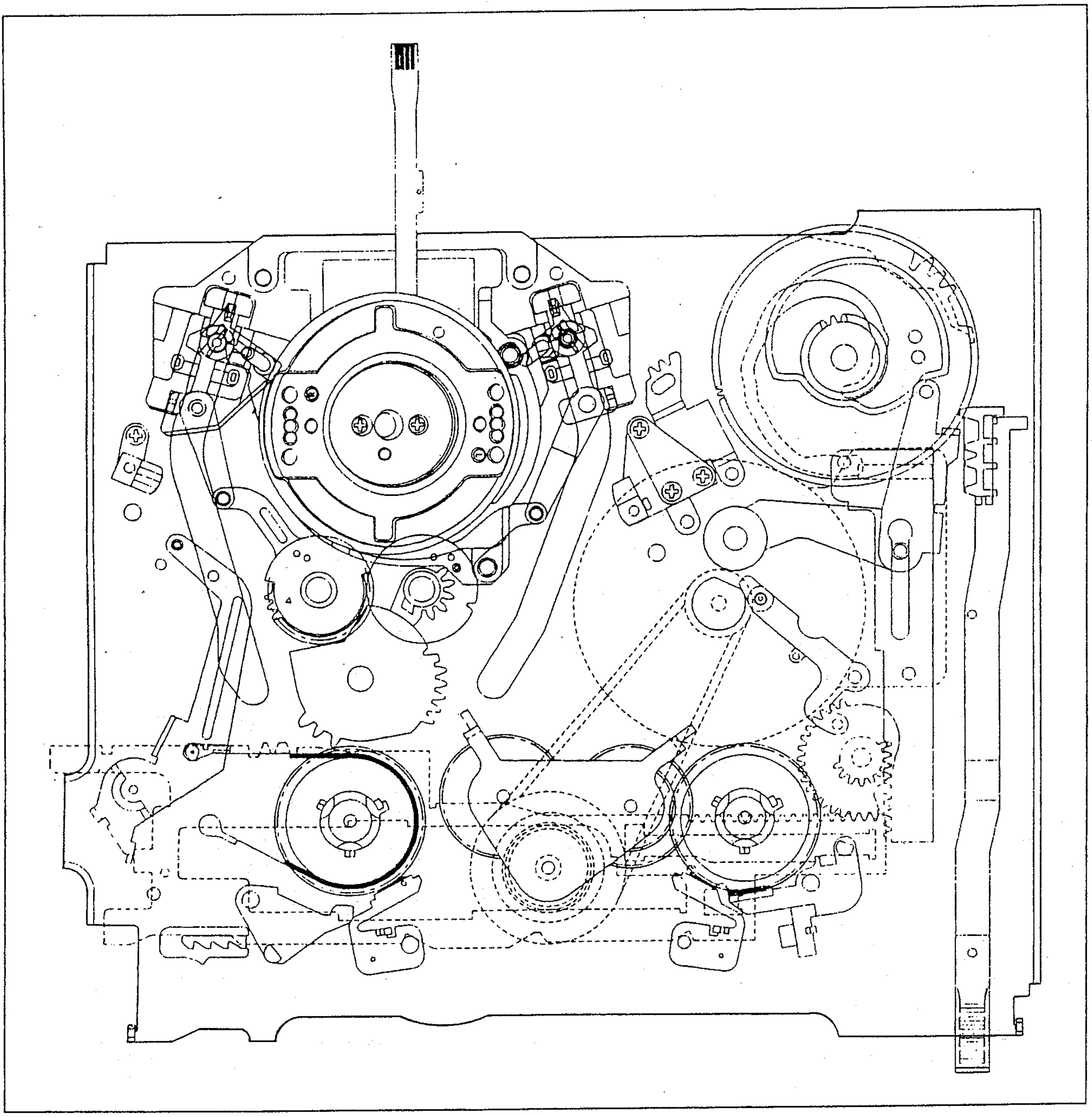


PLAY MODE

9) BRAKE MODE

A. This mode is a mechanical mode which lies in between PLAY mode and FF/REW mode.
If EJECT, STOP or PLAY button is pressed in the FF/REW mode, S & T MAIN BRAKES are applied to the S & T REEL TABLE quickly. So, It can be prevented to loosen of the tape.

B. Mechanical Arrangement
- a. The BAND BRAKE is released from the S REEL TABLE.
- b. The S & T MAIN BRAKE are applied to the S & T REEL TABLE.
- c. The S & T SUB BRAKE are released from the S & T REEL TABLE.
- d. The PINCH ROLLER is released from the CAPSTAN SHAFT.

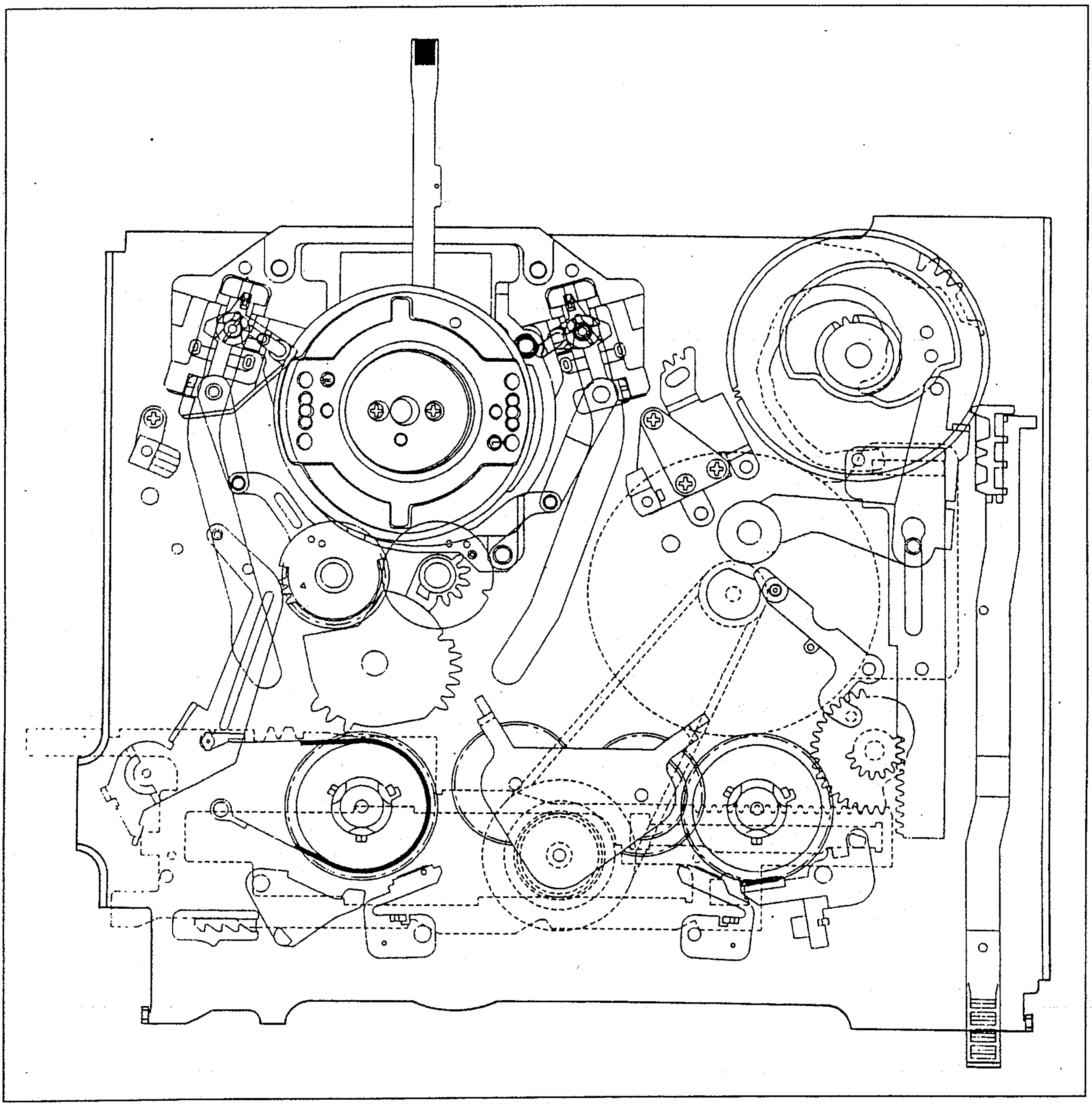


BRAKE MODE

10) FF/REW MODE

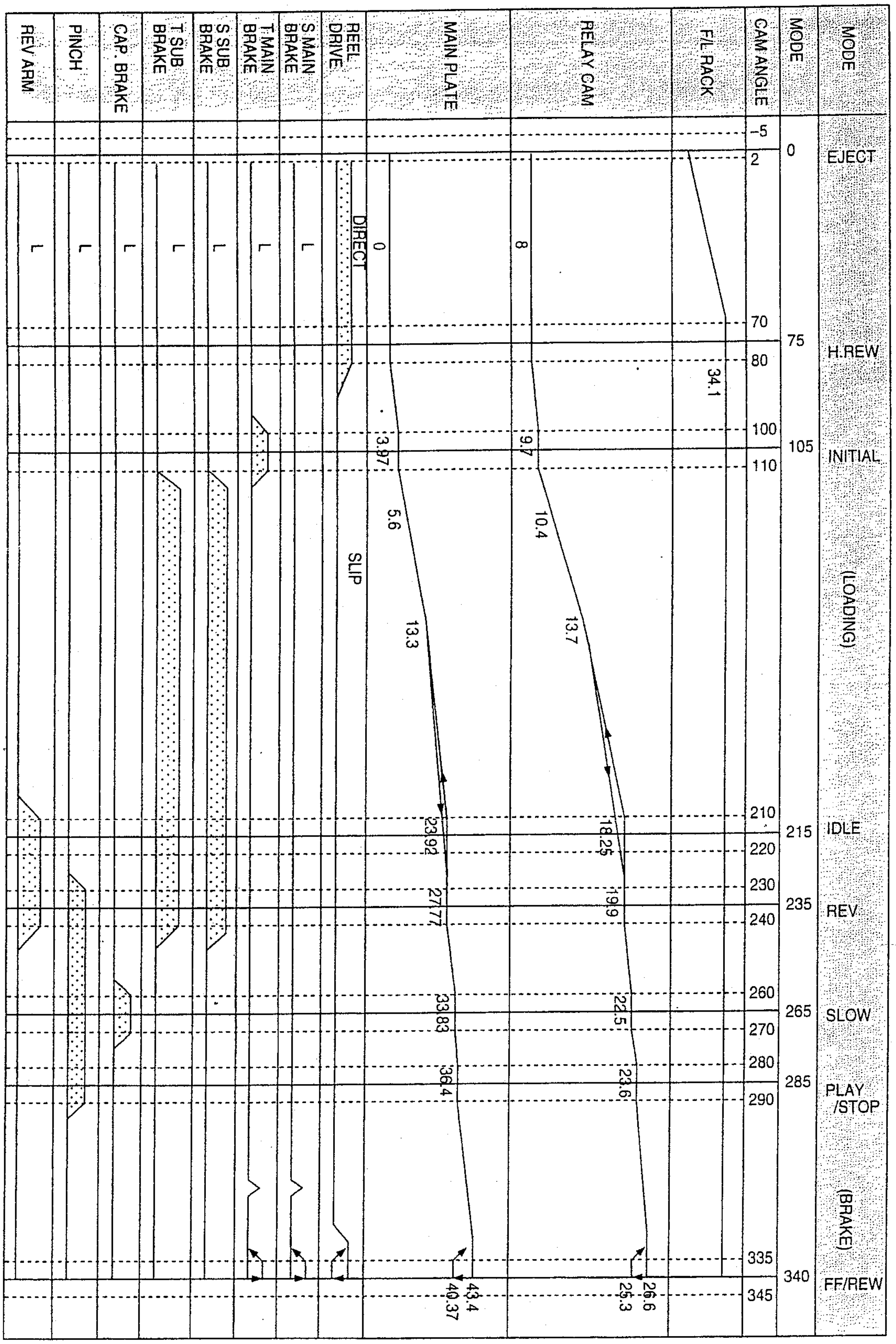
A. In this mode, the cassette tape is rewound to the S & T REEL Table at the high speed by the CW/CCW rotation of the Capstan Motor which is directly releated to the S & T REEL Table.
If the START/END SENSOR is on during this operation, it returns to the STOP MODE and excutes CUE/REV.
During the FF/REW operation, the Drum continues to rotate with the tape wrapped around it and the tape is contacted to the CONTROL HEAD that reads the VISS signal.

B. Mechanical Arrangement
   a. The BAND BRAKE and the S & T MAIN BRAKE are released from the S & T REEL TABLE.
   b. The PINCH ROLLER is separated from the CAPSTAN SHAFT.



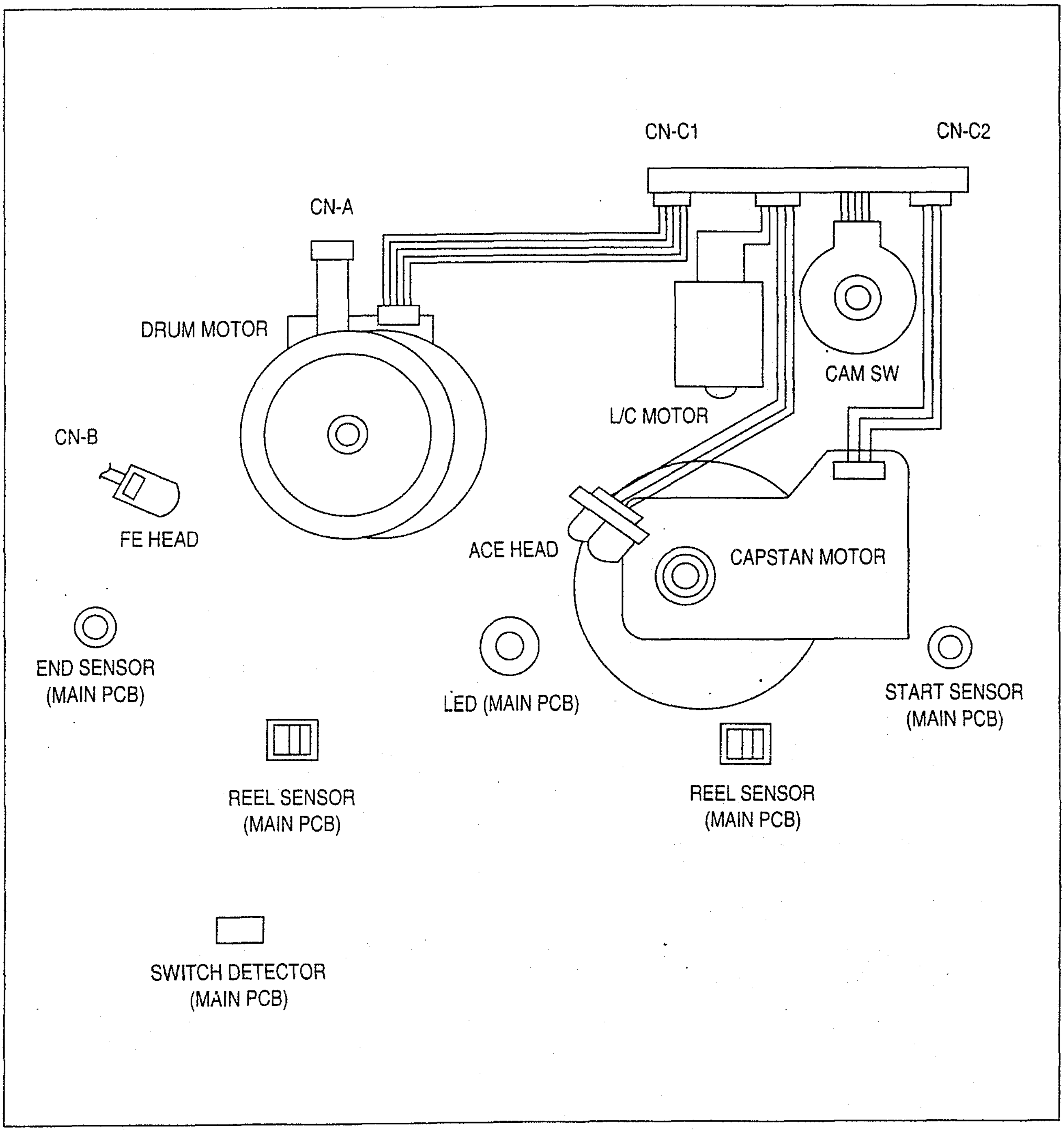
FF/REW MODE

3. FM DECK TIMING CHART



4. WIRING DIAGRAM

1) WIRE DIAGRAM


CN-C1
CN-C2
CN-A
DRUM MOTOR
CAM SW
L/C MOTOR
CN-B
FE HEAD
ACE HEAD
CAPSTAN MOTOR
END SENSOR (MAIN PCB)
LED (MAIN PCB)
START SENSOR (MAIN PCB)
REEL SENSOR (MAIN PCB)
REEL SENSOR (MAIN PCB)
SWITCH DETECTOR (MAIN PCB)

2) CONNECTOR PIN ARRANGEMENT

CN-A (2 HEAD MONO: ELCO)

1	VR 1
2	COMMON
3	VL 1
4	GND

CN-A (4 HEAD MONO)

1	VL 2
2	COMMON
3	VR 2
4	GND
5	VR 1
6	COMMON
7	VL 1

CN B (JAE)

1	FE HEAD
2	GND

CN-C1 (TAICO)

1	DRUM FG
2	DRUM M/T GND
3	DRUM PG
4	DRUM SPP CTL
5	DRUM M/T 12V
6	CAM A
7	CAM B
8	CAM C
9	CAM D
10	LM (+)
11	LM (—)
12	A/E HEAD
13	AUDIO GND
14	AUDIO HEAD
15	AUDIO HEAD
16	CTL HEAD (—)
17	CTL HEAD (+)
18	CAP CTL REF

CN-2 (TAICO)

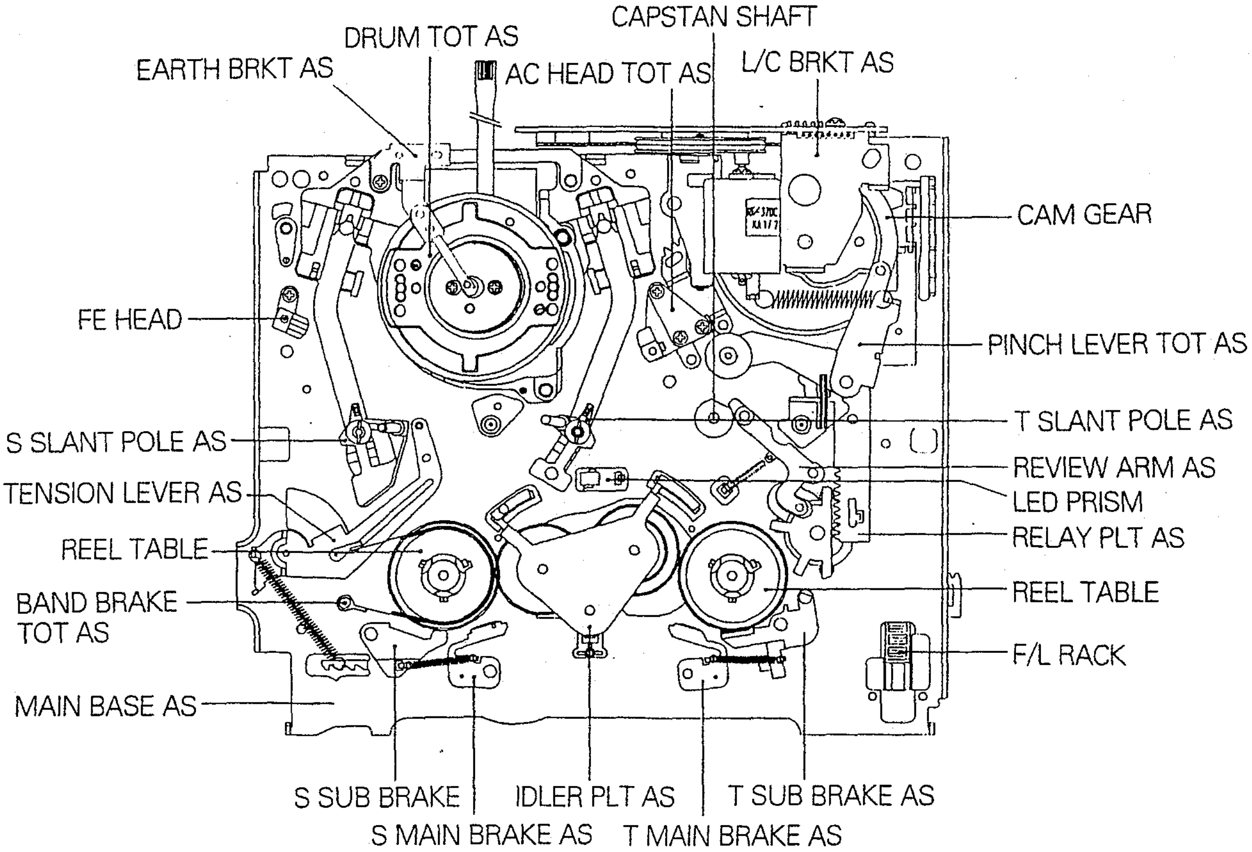
1	CAPSTAN I LM.
2	CONTROL
3	CAP IC GND
4	CAP M/T GND
5	CAPSTAN F/R
6	CAPSTAN FG
7	EVER 5V
8	CAP M/T 12V

2. ARRANGEMENT AND CHECK FOR THE MAJOR PARTS

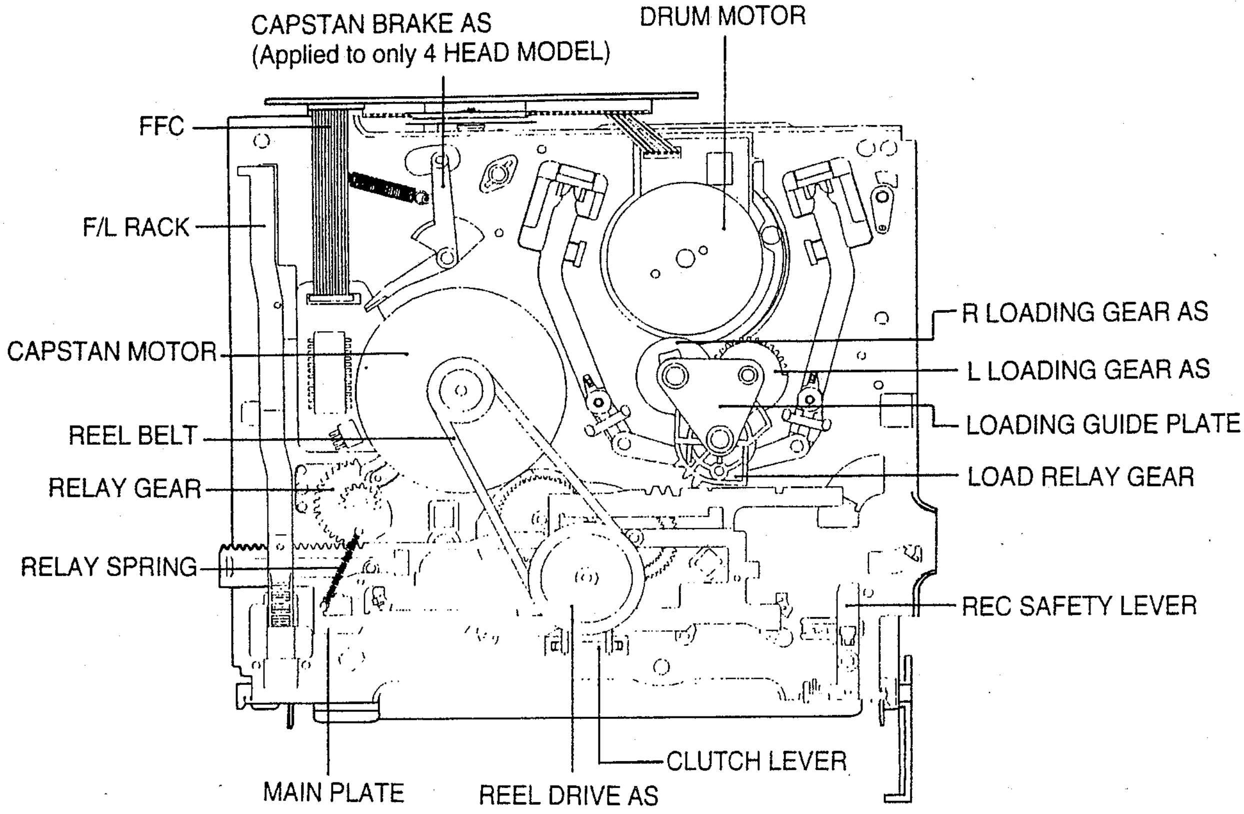
1. PARTS LOCATION

1) PARTS LOCATION OF DECK ASS'Y

A. TOP VIEW

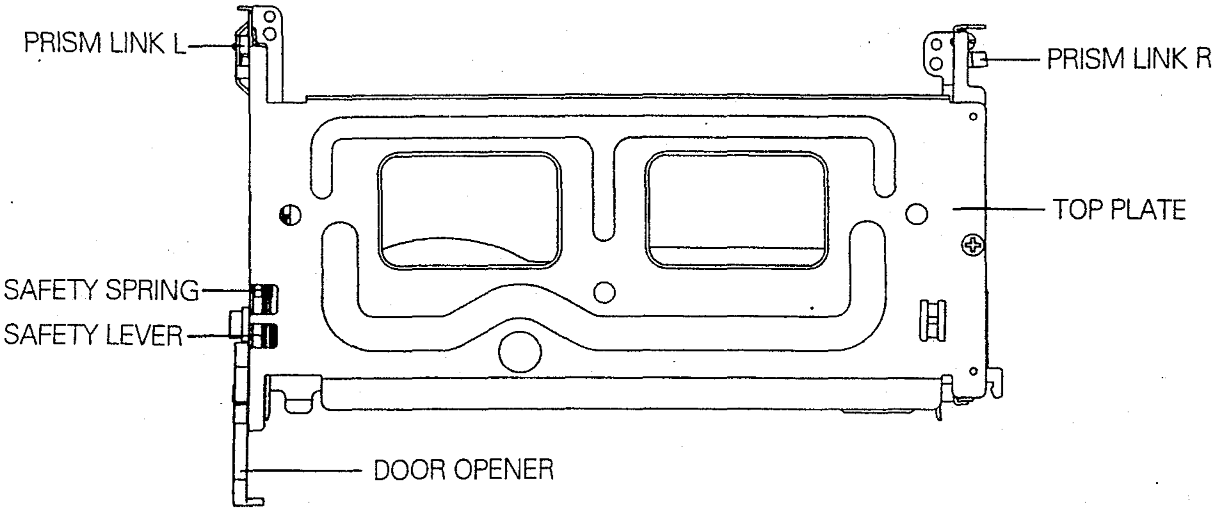

CAPSTAN SHAFT
DRUM TOT AS
EARTH BRKT AS
AC HEAD TOT AS
L/C BRKT AS
CAM GEAR
FE HEAD
PINCH LEVER TOT AS
S SLANT POLE AS
T SLANT POLE AS
TENSION LEVER AS
REVIEW ARM AS
LED PRISM
REEL TABLE
RELAY PLT AS
BAND BRAKE TOT AS
REEL TABLE
F/L RACK
MAIN BASE AS
S SUB BRAKE
IDLER PLT AS
T SUB BRAKE AS
S MAIN BRAKE AS
T MAIN BRAKE AS

B. BOTTOM VIEW

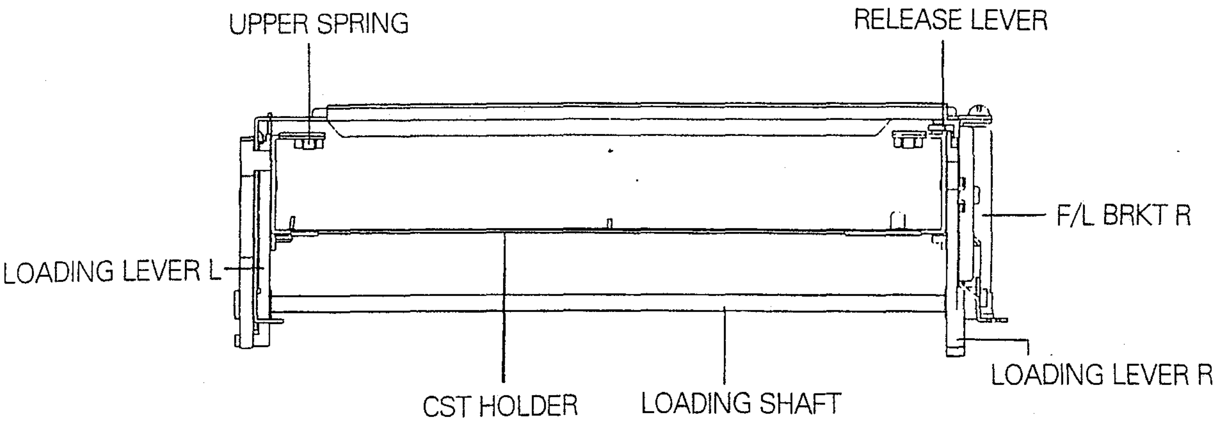

CAPSTAN BRAKE AS
(Applied to only 4 HEAD MODEL)
DRUM MOTOR
FFC
F/L RACK
CAPSTAN MOTOR
REEL BELT
RELAY GEAR
RELAY SPRING
R LOADING GEAR AS
L LOADING GEAR AS
LOADING GUIDE PLATE
LOAD RELAY GEAR
REC SAFETY LEVER
CLUTCH LEVER
MAIN PLATE
REEL DRIVE AS

2) PARTS LOCATION OF FRONT LOADING ASS'Y

A. TOP VIEW


PRISM LINK L
PRISM LINK R
TOP PLATE
SAFETY SPRING
SAFETY LEVER
DOOR OPENER

B. FRONT VIEW


UPPER SPRING
RELEASE LEVER
F/L BRKT R
LOADING LEVER L
LOADING LEVER R
CST HOLDER
LOADING SHAFT

2. PERIODIC MAINTENANCE AND SERVICE SCHEDULE

1) PERIODIC MAINTENANCE AND SERVICE SCHEDULE

A. In order to effectively maintain the excellent performance and fully utilize the features of this apparatus, and to lengthen the life of mechanism and tapes, we strongly urge you to perform the periodic maintenance and inspection as described below.
- After repairing, do the maintenance as described below irrespective of the length of time in use.

B. Cleaning of the Head Drum Ass'y
- Clean the Drum assembly with a cleaning cloth soaked in liquid cleaner (alcohol) by placing lightly against the Drum slowly revolving the rotating HEAD DRUM Ass'y by hand (Do not rotate it by applying the electric power to the motor for cleaning).
- Do not move the cleaning cloth in the vertical direction against the heat-tip.

C. Cleaning of the tape transporting section
Cleaning the tape transporting parts with a cleaning cloth soaked in the alcohol.

D. Cleaning of driving section
Cleaning the driving section with the cloth soaked in the alcohol.

E. Routine inspection
Perform the maintenance and inspection as separately described depending on the period of time in use.

2) CLEANING AND LUBRICATION

A. Cleaning of Tape Transporting System
a. Cleaning of Tape Tranporting System
- Following parts should be cleaned every 500 hours of use.
  - TENSION POLE
  - S GUIDE POST
  - FE HEAD
  - S GUIDE ROLLER
  - S SLANT POLE
  - VIDEO HEAD/DRUM
  - T SLANT POLE
  - T GUIDE ROLLER
  - AC HEAD/AE HEAD
  - T GUIDE POST
  - CAPSTAN SHAFT
  - PINCH ROLLER
- Since the above parts contact with video tape, they tend to collect dust particles if they are stained with dust or foreign substance it have a bad effect on the picture and lead to demage of the tape.
- After cleaning with alcohol, allow the parts to dry thoroughly before using a cassette tape.

b. Cleaning of driving system
- REEL TABLE
- S MAIN BRAKE
- T MAIN BRAKE
- T SUB BRAKE
- CAPSTAN FLYWHEEL/PULLEY
- REEL PULLEY

B. LUBRICATION
- S REEL TABLE POST
- T REEL TABLE POST
- IDLER POST
- After cleaning components with alcohol, lubricate these with one or two drops oil.

3) SERVICE SCHEDULE FOR THE MAJOR PARTS

Following parts should be receive perodic service according to the recommended intervals.

NAME	PERIODIC SERVICE (TIME)				
	1000	2000	3000	4000	5000
DRUM TOTAL ASS'Y	*	O	*	O	*
CAPSTAN MOTOR		O		O	
L/C BRKT ASS'Y		O		O	
REEL BELT		O		O	
IDLER PLATE TOTAL ASS'Y		*		O	
REEL TABLE			O		
T SUB BRAKE ASS'Y		O		O	
BAND BRAKE ASS'Y		O		O	
S MAIN BRAKE ASS'Y		O		O	
T MAIN BRAKE ASS'Y		O		O	
PINCH ROLLER ASS'Y		*	O	*	
AC HEAD ASS'Y			O		
FE HEAD					O
REEL GEAR TOTAL ASS'Y		*		O	

* : Check and Replace if necessary   O: Replace

Note: Even though the unit is not used frequently, cleaning, lubrication and replacement of the belt should be undertaken every 2 years.

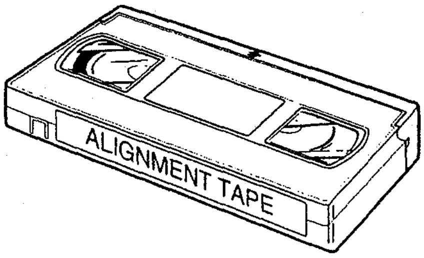
3. JIGS AND TOOLS

1) LIST OF JIGS AND TOOLS

NO	ITEMS	MODEL	FIG. NO	REMARKS
1	ALIGNMENT TAPE	NTSC: SP MONOSCOPE 7KHz SP COLOR BAR 1KHz (EP MONOSCOPE) PAL: SP MONOSCOPE 6 KHz SP COLOR BAR 1KHz (LP MONOSCOPE)	①	CHECKING OF THE TAPE TRANSPORTING SYSTEM
2	CLEANING TAPE (DAEWOO)	DHC-602V	②	CLEANING OF THE TAPE TRANSPORTING SYSTEM
3	CASSETTE TAPE (KOKUSAI)	KT-300NV KT-300RV	③	MEASUREMENT OF REEL TORQUE
4	VHS SPINDLE HEIGHT GAUGE	TSH-V4	④	MEASUREMENT OF REEL TABLE HEIGHT
5	TENTELO METER (TENTELO)	T2-H7-UM	⑤	MEASUREMENT OF THE BACK TENSION
6	FAN TYPE TENSION METER	BELOW 3KG	⑥	MEASUREMENT OF THE PRESSING FORCE FOR THE PINCH ROLLER
7	DENTAL MIRROR		⑦	CHECKING OF THE TAPE TRANSPORTING SYSTEM
8	+ DRIVER – DRIVER ADJUSTMENT DRIVER		⑧ -1 ⑧ -2 ⑧ -3	ASSEMBLY, DISASSEMBLY AND ADJUSTMENT

2) SKETCH OF JIGS AND TOOLS

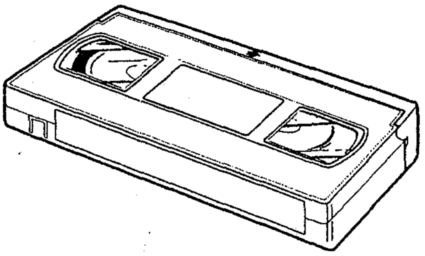
①


ALIGNMENT TAPE

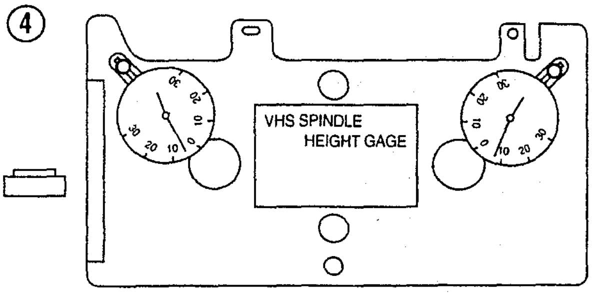
②

CLEANING TAPE

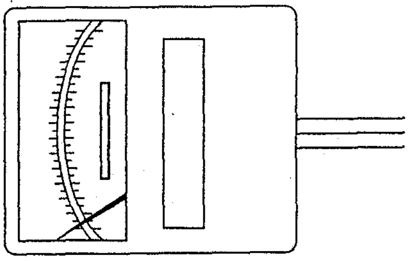
③



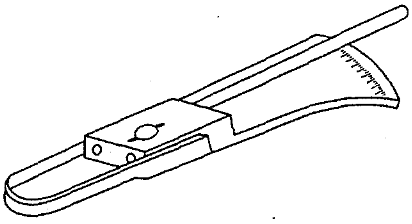
④


VHS SPINDLE
HEIGHT GAGE
30
20
10
0
10
20
30

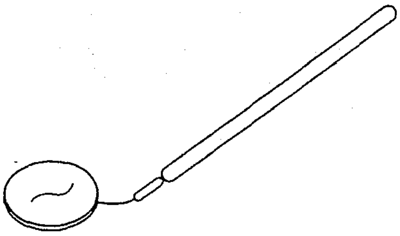
⑤



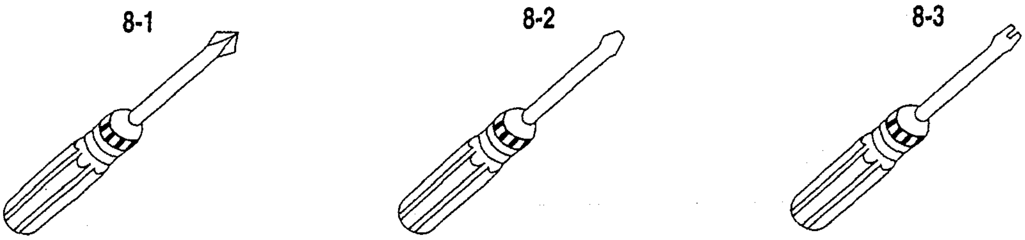
⑥



⑦



⑧



8-1

8-2

8-3

3. DISASSEMBLY AND REPLACEMENT

CAUTION : The DECK MECHANISM can be removed only in the EJECT mode.

1. DISASSEMBLY OF THE DECK TOTAL ASS'Y AND F/L ASS'Y (See Fig. 3-1)

1) Remove the top cover and front panel.
2) Separate the Drum FPC ① and F/E HEAD CONNECTOR ②.
3) Remove the 3 screws ③ and disassemble the DECK ④.
4) Remove the 2 screws ⑤ from the F/L ASS'Y.
5) Remove F/L ASS'Y from the Hook which is formed in the Main Base by pushing it while pulling the upper part of F/L ASS'Y ⑥.

NOTE:

- Please be careful not to bend or deform the Hooks formed in the MAIN BASE and Claws in the F/L Ass'y.

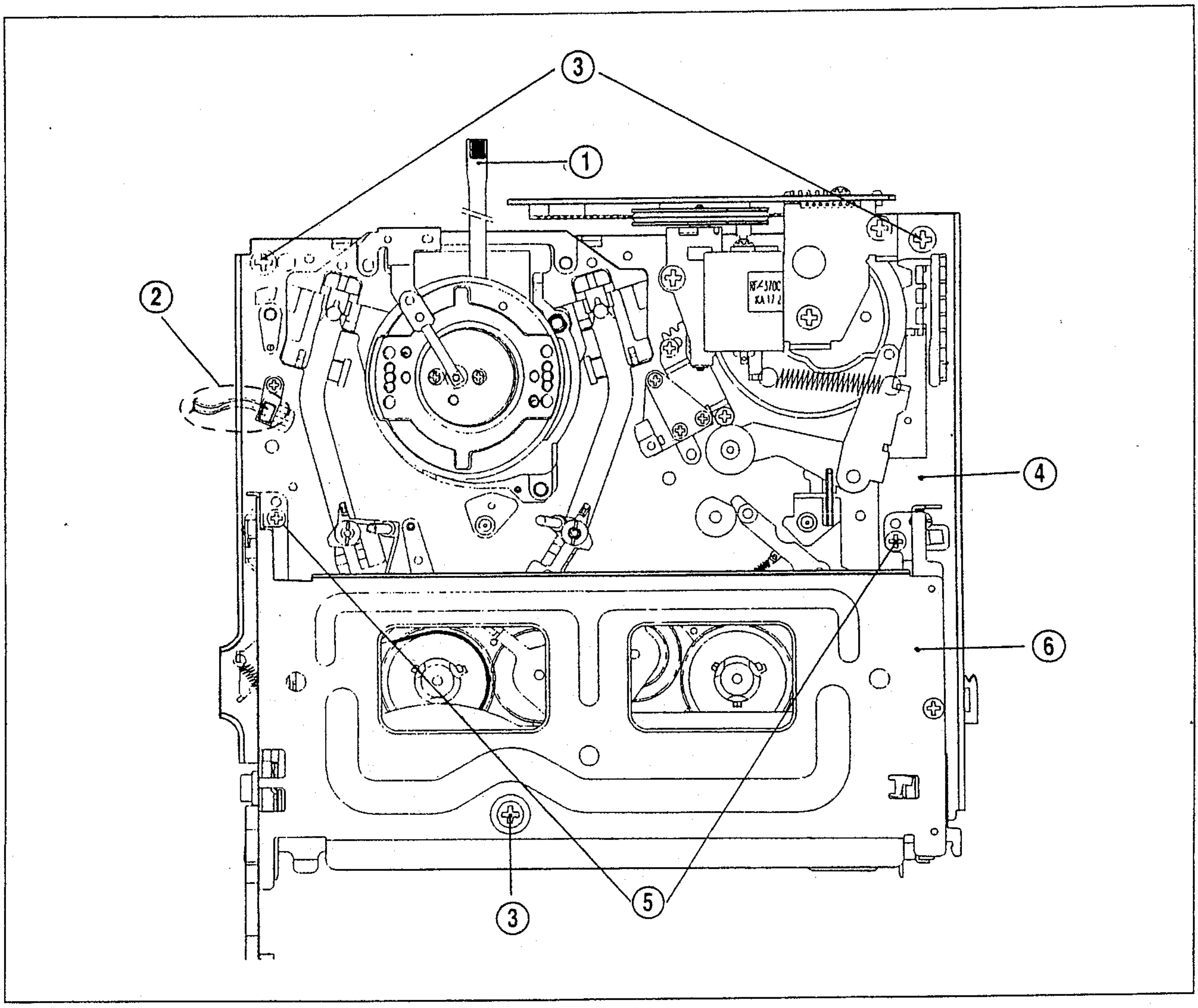


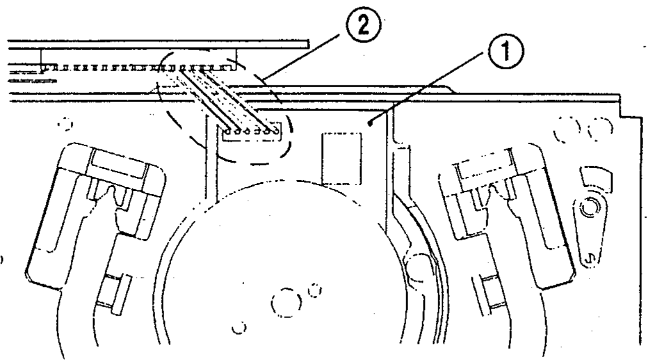
Fig. 3-1

2. REPLACEMENT OF THE DRUM TOTAL ASS'Y (See Fig. 3-2)

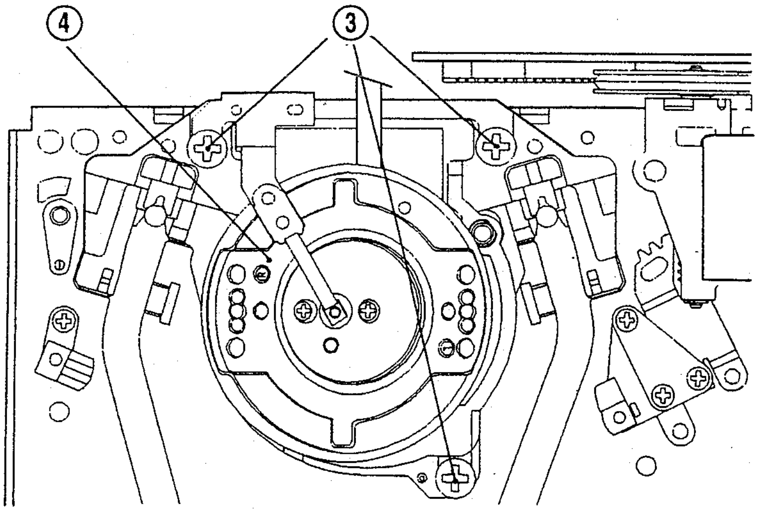
1) Turn over the DECK ASS'Y.
2) Separate the L/C-DRUM CONN. AS ② from the DRUM PCB ①.
3) Turn over the DECK ASS'Y again and remove the 3 screws ③ and remove the DRUM TOTAL ASS'Y ④.
4) After changing new DRUM ASS'Y please assemble it in the reverse order.
5) After completing this procedure, check and confirm the state of tape running and adjust the tape transporting system (Refer to SEC. 5) if necessary.

NOTE:

- Avoid damaging the HEAD or getting the HEAD dirty.
- If playback picture is poor, try cleaning the HEAD and checking the connectors before replacing DRUM ASS'Y.



(BOTTOM VIEW)



(TOP VIEW)

Fig. 3-2

3. REPLACEMENT OF THE S, T SLANT POLE ASS'Y (See Fig. 3-3)

1) Remove the DRUM TOTAL ASS'Y according to the method of the SEC. 3-2.
2) Remove the 2 screws ① and the LOADING GUIDE PLATE ②.
3) Remove the R & L LOADING GEAR ASS'Y ③, ④.
4) Remove the S & T SLANT POLE ASS'Y ⑤, ⑥ after moving them to the point "A" by pulling them in the direction of the arrow ↑ .
5) After changing new SLANT POLE ASS'Y please assemble it in the reverse order.
6) Be careful not to get grease on the GUIDE ROLLER.

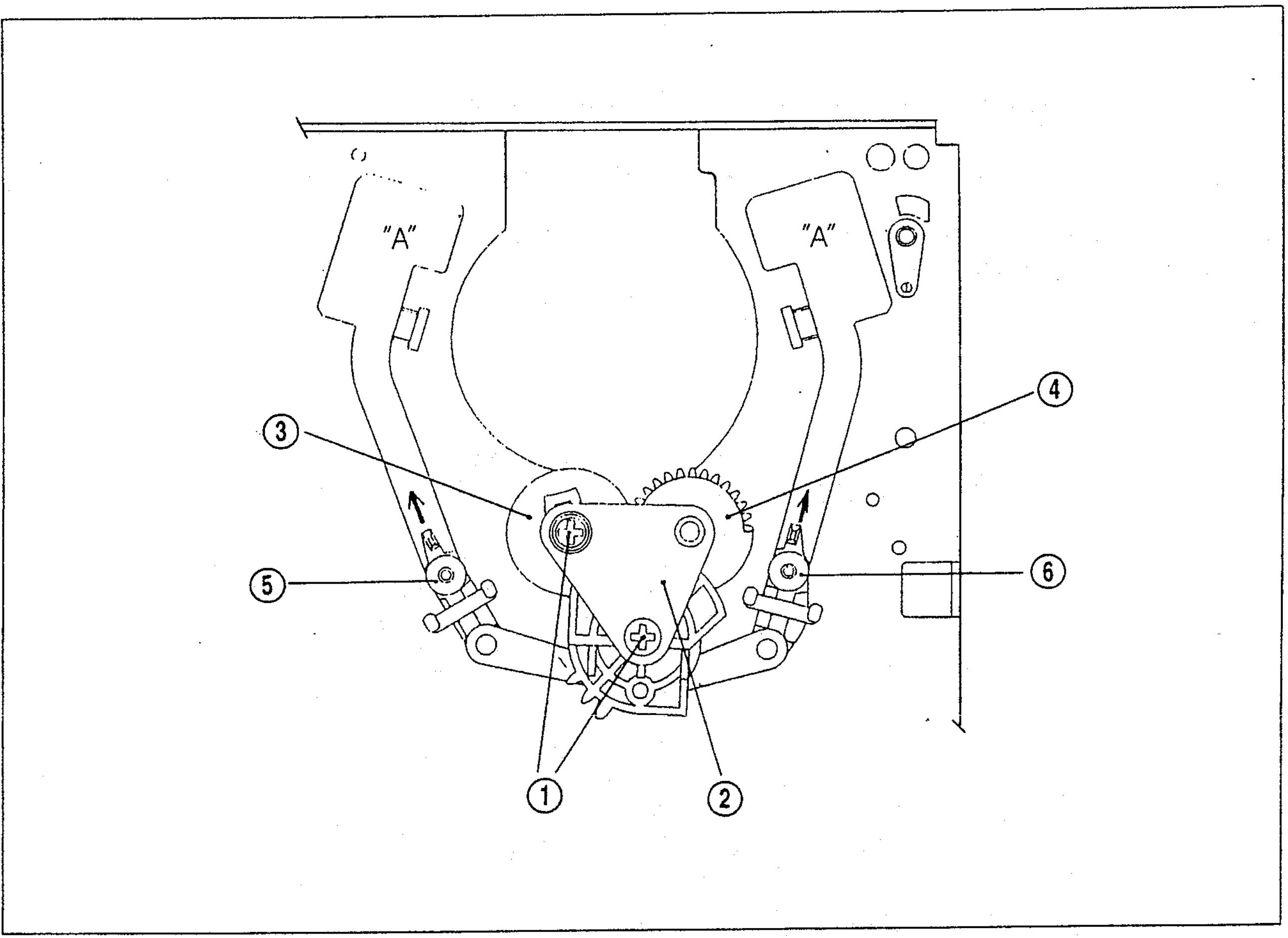


Fig. 3-3

4. REPLACEMENT OF THE PINCH LEVER TOTAL ASS' Y (See Fig. 3-4)

1) Unhook the PINCH SPRING HOOK ② which is hanging on the L/C BRKT ASS'Y ①.
2) After removing the POLY WASHER ③ disassemble the PINCH LEVER TOTAL ASS'Y ④.
3) After changing new PINCH LEVER TOTAL ASS'Y, assemble it in reverse order.

NOTE:
- Pay attention to be located the BOSS of the PINCH LEVER ASS'Y to the outside of the CAM. (See Fig. 4-2)
- Pay attention to avoid staining with grease or oil on the outside of the PINCH ROLLER.

5. REPLACEMENT OF THE A/C HEAD TOTAL ASS'Y (See Fig. 3-4)

1) After removing the 2 screws ⑤ from the A/C HEAD TOTAL ASS'Y, remove the A/C HEAD TOTAL ASS'Y ⑥.
2) After changing new A/C HEAD TOTAL ASS'Y, please assemble it in the reverse order.
3) After changing it, please re-adjust the tape transporting system and audio bios. (Refer to SEC. 5)

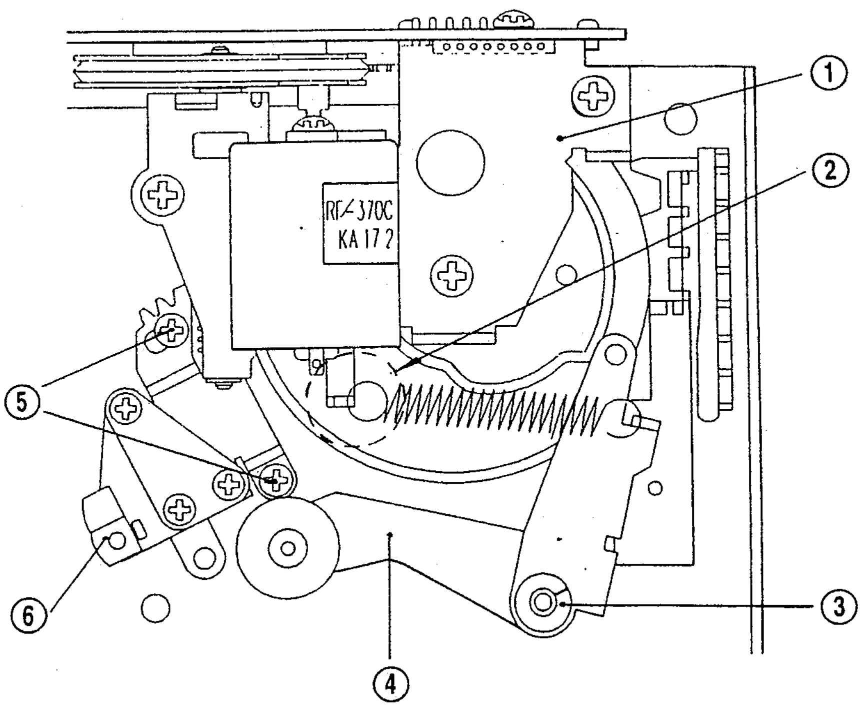
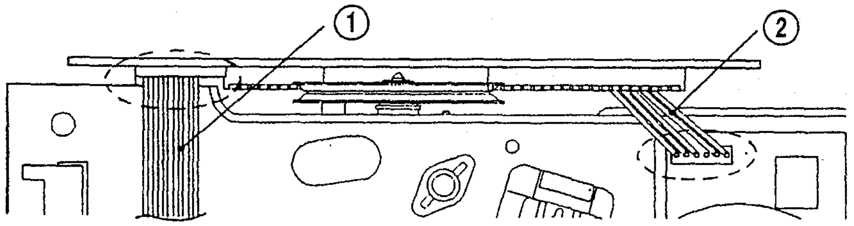


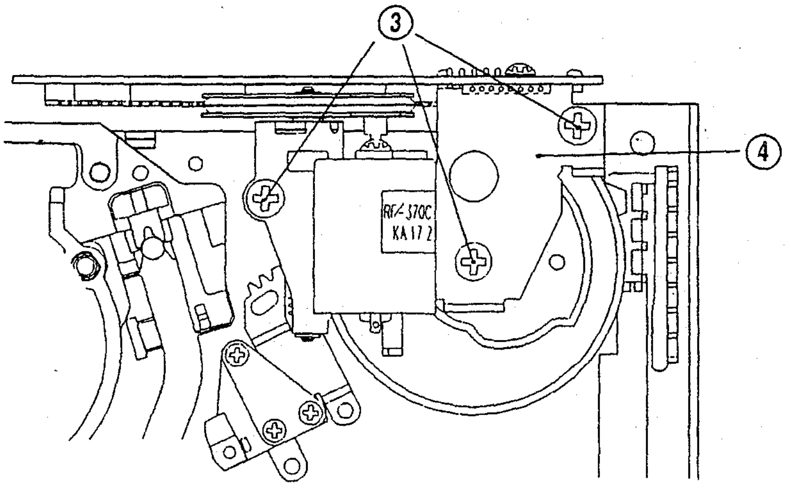
Fig. 3-4

6. REPLACEMENT OF THE L/C BRKT ASS'Y (See Fig. 3-5)

1) Turn over the DECK.
2) Separate the CAPSTAN EFC ① from the CONNECTOR of the L/C BRKT ASS'Y ④.
3) Separate the L/C-DRUM CONN. AS ② from the CONNECTOR of the DRUM ASS'Y.
4) Return the DECK over.
5) After removing the 3 screws ③ from the L/C BRKT ASS'Y.
6) After changing to the new L/C BRKT ASS'Y, reassemble the above-mentioned parts in the reverse order.
7) Pay attention to the assembly datum position, when reassembling the MODE SWITCH. (Refer to Fig. 4-2)



(BOTTOM VIEW)



(TOP VIEW)

Fig. 3-5

7. REPLACEMENT OF THE MAIN PLATE (See Fig. 3-6)

1) After turning over the deck, separate RELAY SPRING ② from the MAIN PLATE ①..
2) After removing the one screw ③, disassemble the RELAY GEAR ④.
3) After removing the REEL BELT ⑤, remove the POLY WASHER ⑥.
4) Remove the REEL DRIVE TOTAL ASS'Y ⑦ and CLUTCH LEVER ⑧.
5) Push the MAIN PLATE to left side and remove it.

NOTE:

- When removing the MAIN PLATE in the state that the F/L RACK is assembled, pay attention to avoid the transformation of the MAIN PLATE by interfering of each other.
- When reassemblying, pay attention to the assembly position of the MAIN PLATE and RELAY GEAR. (See Fig. 4-3)
- Before assemblying the REEL DRIVE TOTAL ASS'Y, make sure of the state of POLY SLIDER on the REEL DIRVE POST.
- When assemblying or disassemblying, pay attention to avoid touching oil or glease on the REEL BELT.

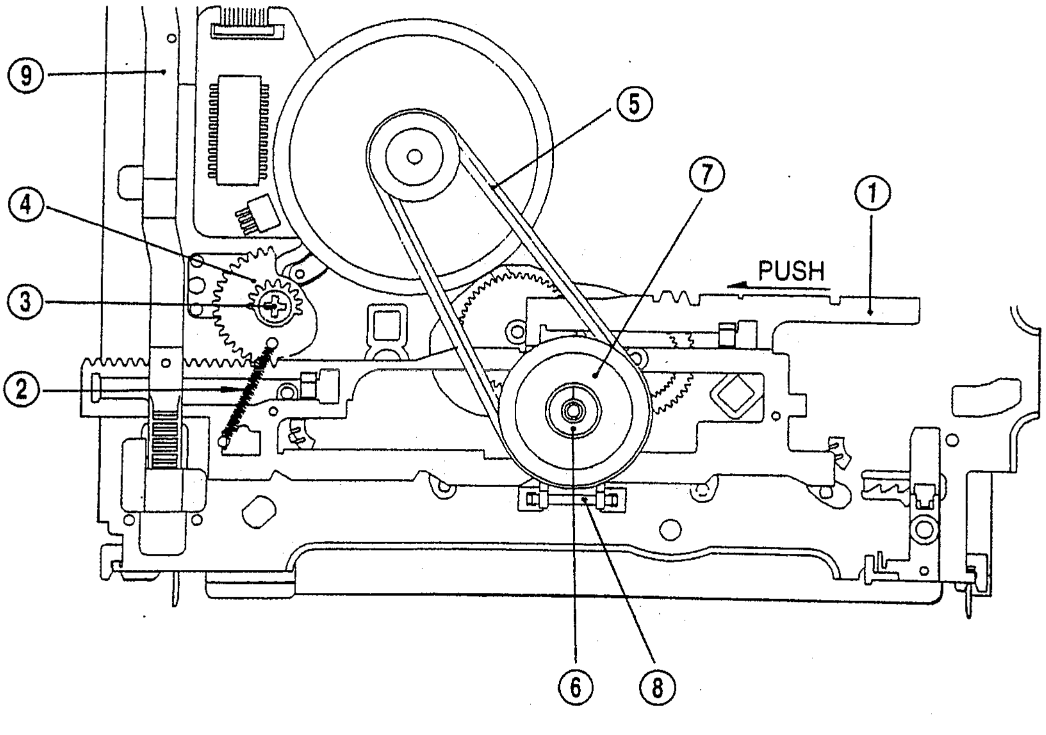


Fig. 3-6

8. REPLACEMENT OF THE CAM GEAR, RELAY PLATE, F/L RACK (See Fig. 3-7)

1) Remove the RELAY GEAR according to the SEC. 3-7.
2) Remove the PINCH LEVER TOTAL ASS'Y and L/C BRAKT ASS'Y according to SEC. 3-4 and 3-7.
3) Remove the CAM GEAR ①.
4) Remove the RETURN LEVER ②.
5) Slide the RELAY PLATE ⑤ until the HOLE ③ formed in RELAY PLATE meets the PINCH POST ④ and disassemble the RELAY PLATE.
6) Slide the F/L RACK ⑥ in the direction of arrow and then remove the F/L RACK backward.
7) After changing new components, assemble it in reverse order.
8) Pay attention to the location of assembling when re-assemble. (See Fig. 4-1)

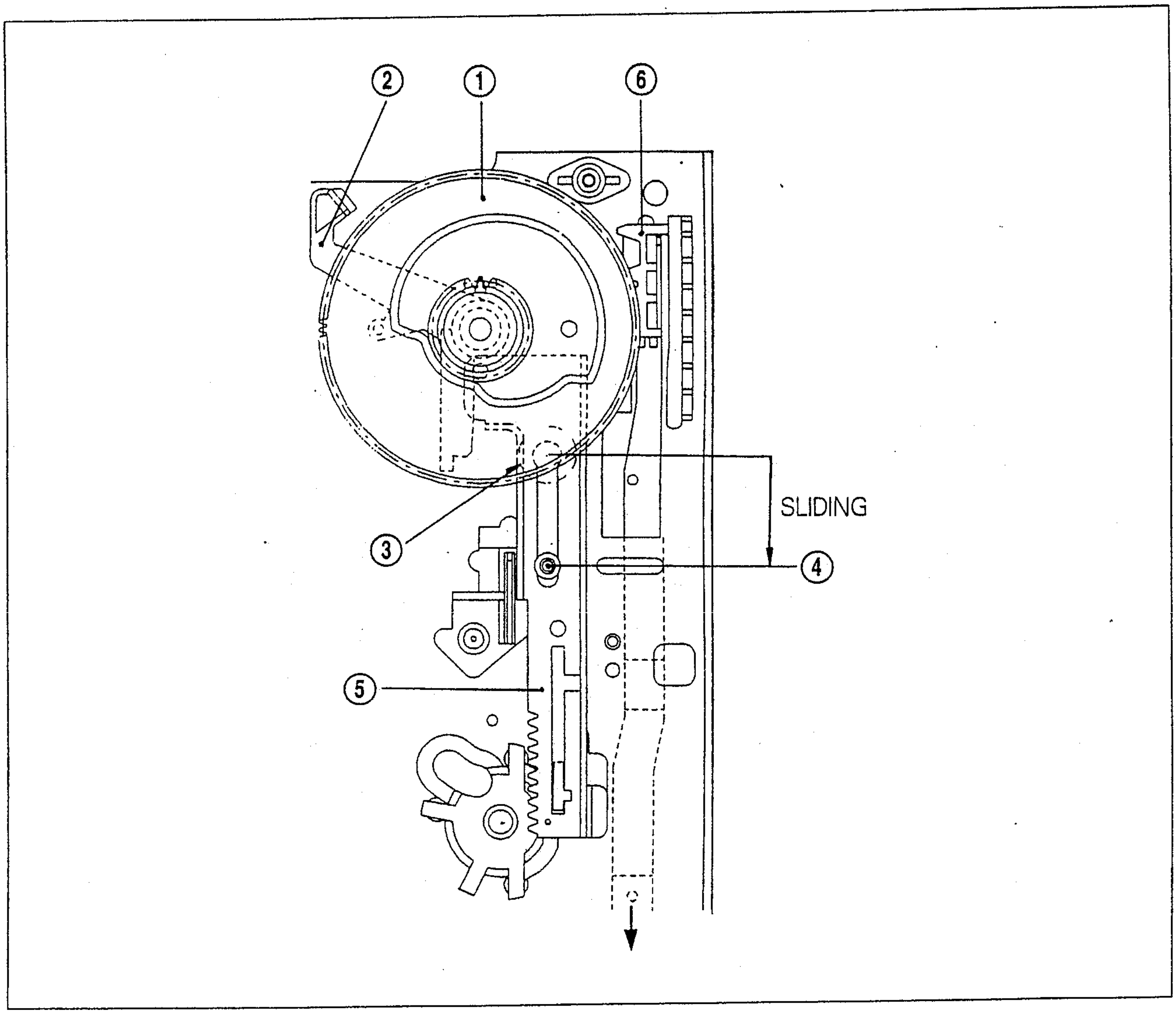


Fig. 3-7

9. REPLACEMENT OF THE TENSION LEVER ASS'Y (See Fig. 3-8)

1) Separate the TENSION SPRING ② from the HOOK "A" of the MAIN BASE ①.
2) Remove the BAND BRAKE CAP ③ by means of lift with proper force.
3) Disassemble the TENSION LEVER ASS'Y ④ in the state of pulling back the HOOK "B".
4) Remove the BAND BRAKE ASS'Y ⑤ from the TENSION LEVER ASS'Y while rotating in the direcction of the arrow.
5) Re-assemble in the reverse order.
6) After re-assembling it, adjust the position of the TENSION POLE. (See SEC. 4-4)
7) If necessary, adjust and measure the BACK TENSION (See SEC. 4-5).
8) Avoid getting grease or oil on the FELT of the BAND BRAKE ASS'Y.
   Also avoid damaging the HOOK "B".

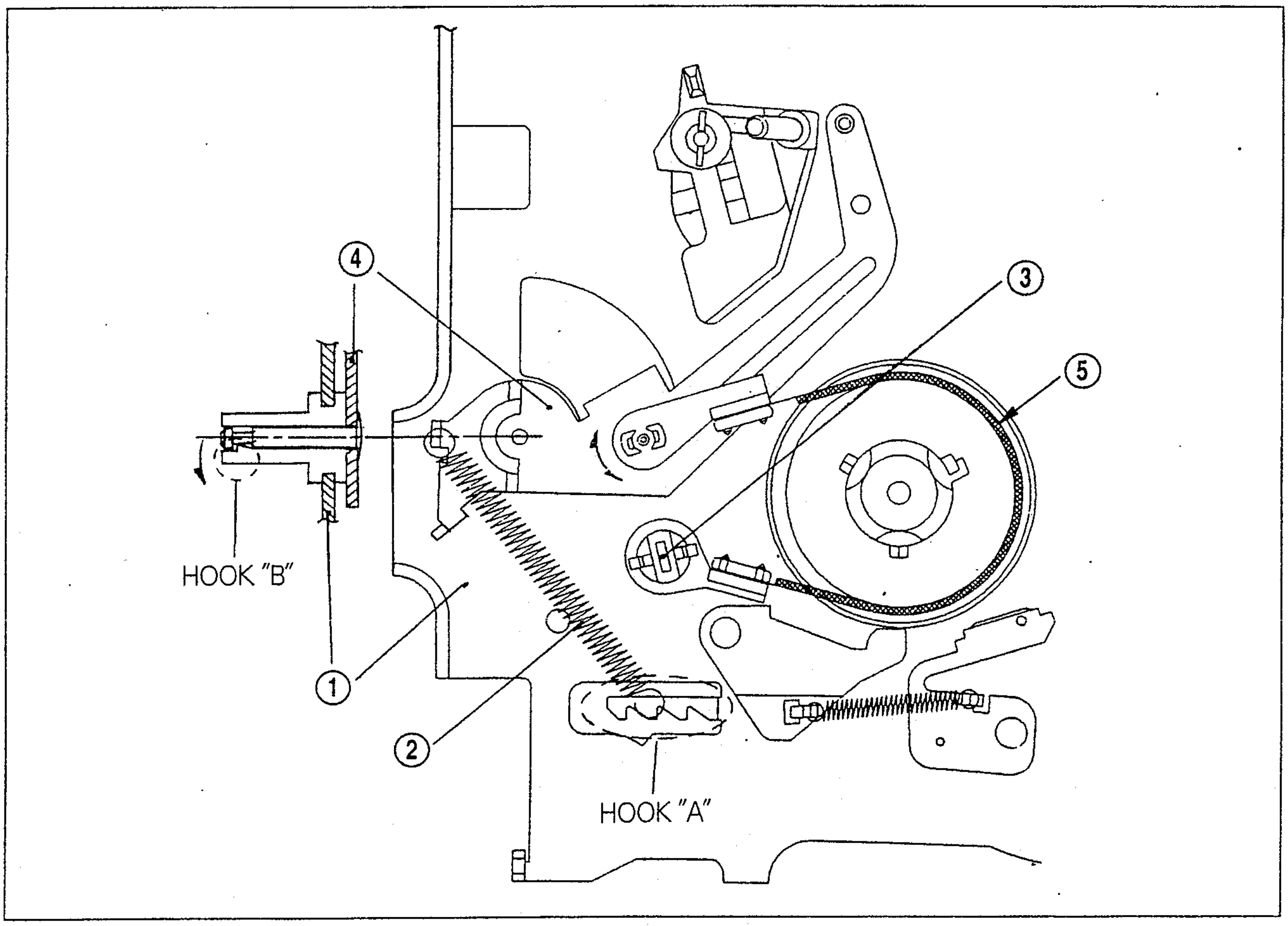


Fig. 3-8

10. REPLACEMENT OF THE CAPSTAN MOTOR (See Fig. 3-9)

1) After turning over the DECK ASS'Y, separate the CAPSTAN FFC ① from the CONNECTOR ②.
2) Disassemle the REEL BELT ③.
3) Separate the CAPSTAN BRAKE SPRING ④ from the HOOK "A".
4) Disassemble the CAPSTAN BRAKE ASS'Y ⑤ in the state of pulling back the HOOK "B".
5) After turning over the DECK ASS'Y again, separate the REVIEW ARM SPRING ⑥ from the HOOK "C".
6) After removing the POLY WASHER ⑦, disassemble REVIEW ARM ASS'Y ⑧.
7) After removing the 3 screws ⑨ from the CAPSTAN MOTOR, disassemble the CAPSTAN MOTOR ⑩.

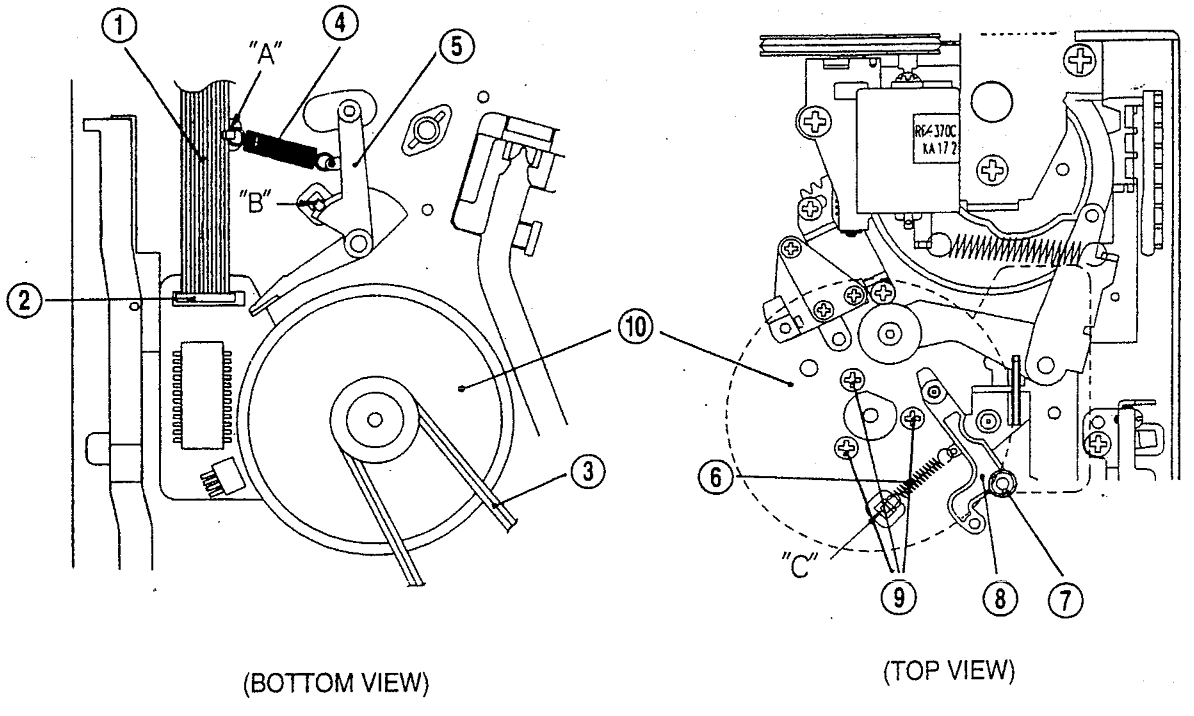


Fig. 3-9

4. MECHANICAL ADJUSTMENTS

1. MECHANICAL CHECKS

If irregular operation occurs or when reassembling a part, please check the following.

1) Make sure that the datum hole of the RELAY PLATE meets that of the MAIN BASE in the Eject Mode as shown in Fig. 4-1.
2) Make sure that the datum hole of the CAM GEAR meets that of the MAIN BASE in the Eject Mode as shown in Fig. 4-1.
3) There are two triangle mark in the MODE SWITCH. When installing the L/C BRKT ASS'Y, make sure that the one marks meets the other in the Eject Mode as shown in Fig. 4-2.
4) Make sure the that the BOSS of the PINCH LEVER ASS'Y is located outside of the CAM of the CAM GEAR in the Eject Mode as shown in Fig. 4-2.
5) Make sure that the datum hole of the MAIN PLATE meets that of the MAIN BASE in the Eject Mode as shown in Fig. 4-3.
6) When installing the RELAY GEAR, make sure that the triangle mark meets the last groove of the teeth of the MAIN PLATE in the Eject Mode as shown in Fig. 4-3.
7) Make Sure that the triangle mark of the L LOADING GEAR ASS'Y meets the ς -Shaped mark of the R LOADING GEAR ASS'Y in the Eject Mode as shown in Fig. 4-4.
8) Make sure that the 1'st tooth of the R LOADING GEAR ASS'Y meets the 1'st groove of the LOADING GEAR ASS'Y in the Eject Mode as shown in Fig. 4-4.

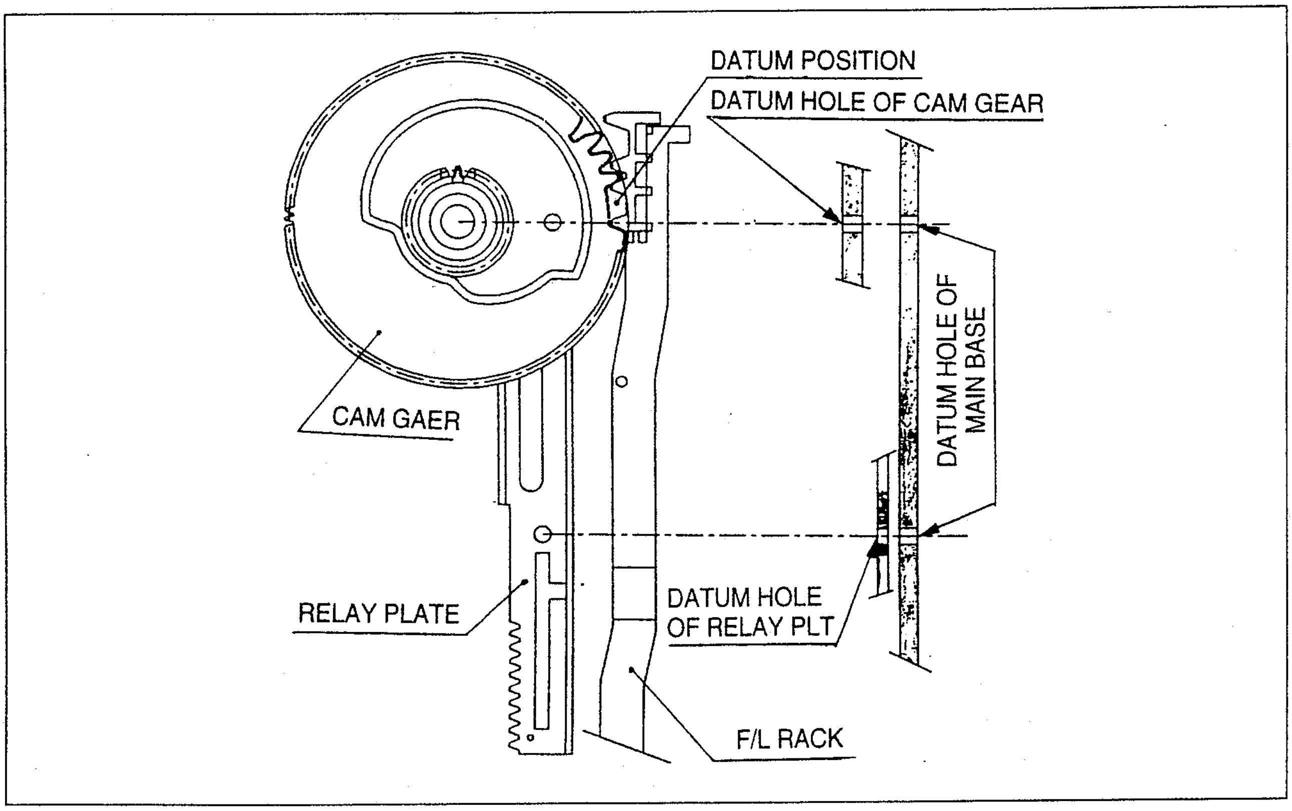

DATUM POSITION
DATUM HOLE OF CAM GEAR
DATUM HOLE OF MAIN BASE
CAM GAER
RELAY PLATE
DATUM HOLE
OF RELAY PLT
F/L RACK

Fig. 4-1 DATUM POSITION OF RELAY PLATE & CAM GEAR

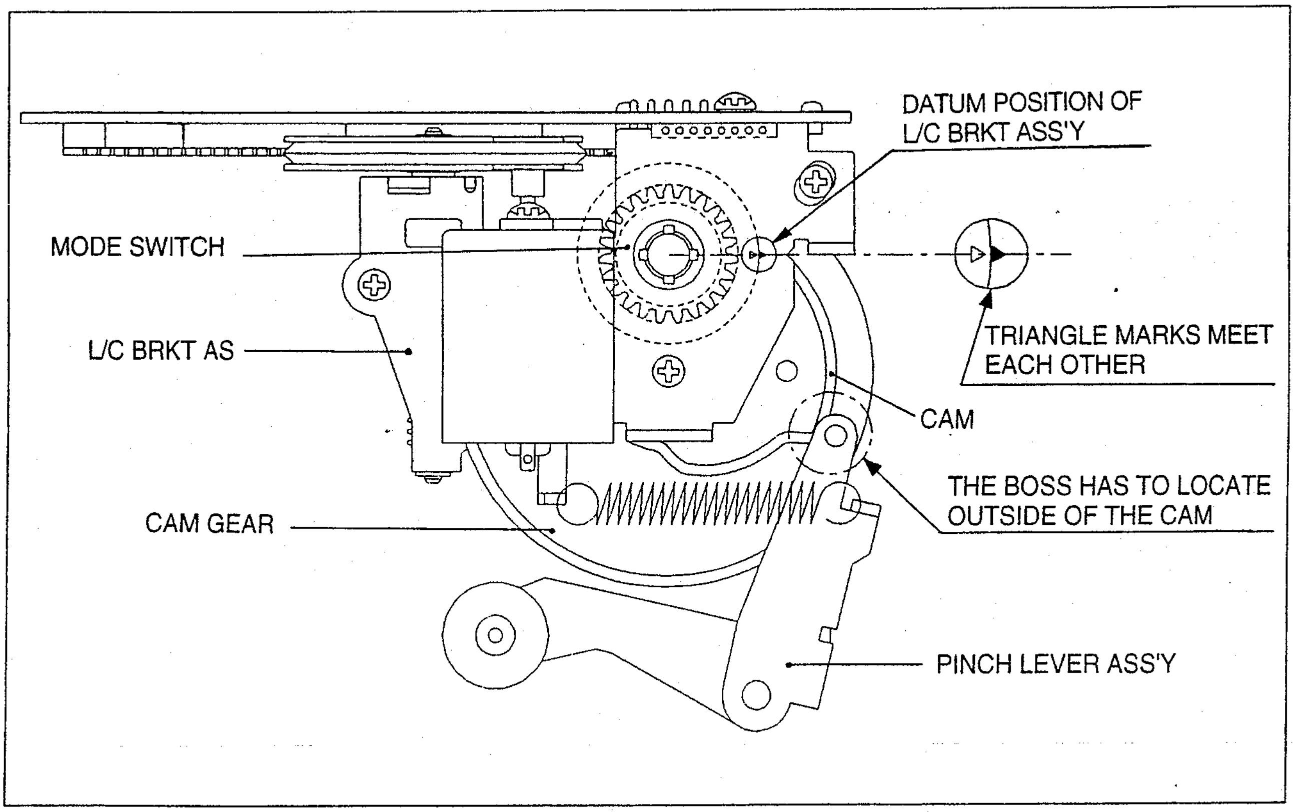

DATUM POSITION OF
L/C BRKT ASS'Y
MODE SWITCH
L/C BRKT AS
TRIANGLE MARKS MEET
EACH OTHER
CAM
THE BOSS HAS TO LOCATE
OUTSIDE OF THE CAM
CAM GEAR
PINCH LEVER ASS'Y

Fig. 4-2 DATUM POSITION OF L/C BRKT AS & PINCH LEVER AS

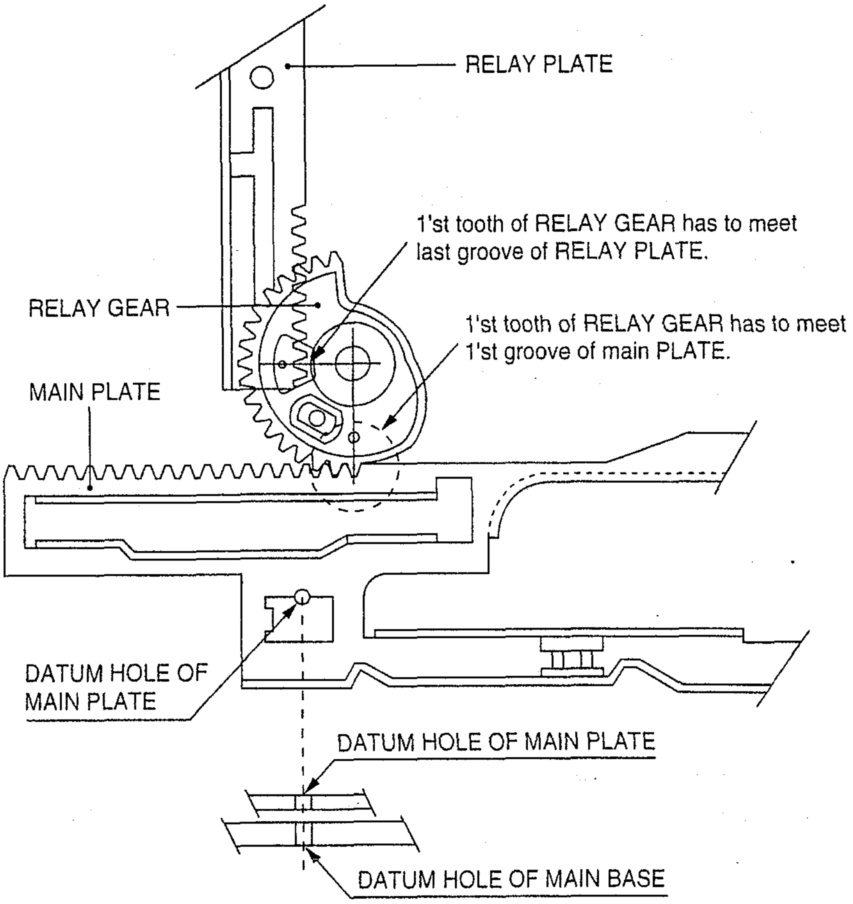

RELAY PLATE
1'st tooth of RELAY GEAR has to meet
last groove of RELAY PLATE.
RELAY GEAR
1'st tooth of RELAY GEAR has to meet
1'st groove of main PLATE.
MAIN PLATE
DATUM HOLE OF
MAIN PLATE
DATUM HOLE OF MAIN PLATE
DATUM HOLE OF MAIN BASE

Fig. 4-3 DATUM POSITION OF MAIN PLATE & RELAY GEAR

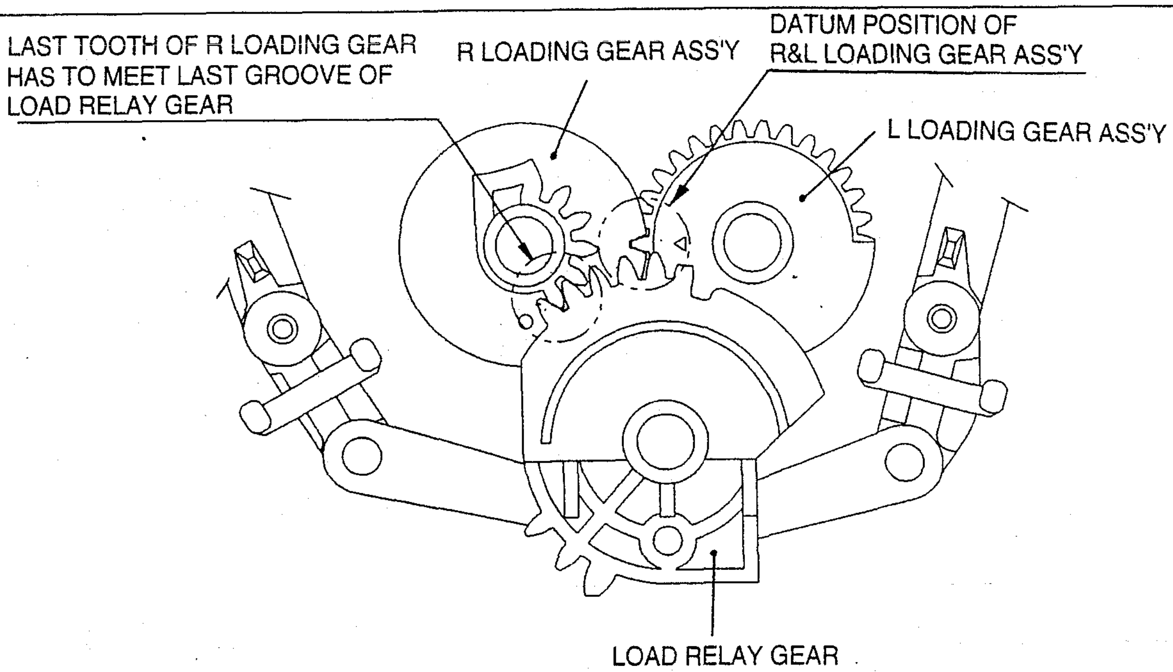

LAST TOOTH OF R LOADING GEAR
HAS TO MEET LAST GROOVE OF
LOAD RELAY GEAR
R LOADING GEAR ASS'Y
DATUM POSITION OF
R&L LOADING GEAR ASS'Y
L LOADING GEAR ASS'Y
LOAD RELAY GEAR

Fig. 4-4 DATUM POSITION OF LOADING GEAR ASS'Y & LOAD RELAY GEAR

2. HOW TO SET MECHANICAL MODE

1) With the F/L ASS'Y removed, turn on the POWER.
2) If rotate the WORM PULLEY 2 or 3 times manually, it will start loading and move to PLAY/STOP mode.
3) Press the desired button.
4) On performing the desired mode, pull out the power plug from the outlet.
5) Assemble and disassemble the F/L ASS'Y in the only EJECT mode.

3. MEASUREMENT OF PRESSING FORCE FOR PINCH ROLLER

1) In the state of loading the cassette tape, playback the tape by pressing the PLAY button.
2) After hanging the PUSH-PULL GUAGE on the HOOK of PINCH LEVER TOTAL AS, pulling it to the direction of Ⓐ indicated by the arrow as shown Fig. 4-5.
3) The very moment tape stop, read the scale of PUSH-PULL GUAGE. (SPEC: 1.1±0.2 kg).

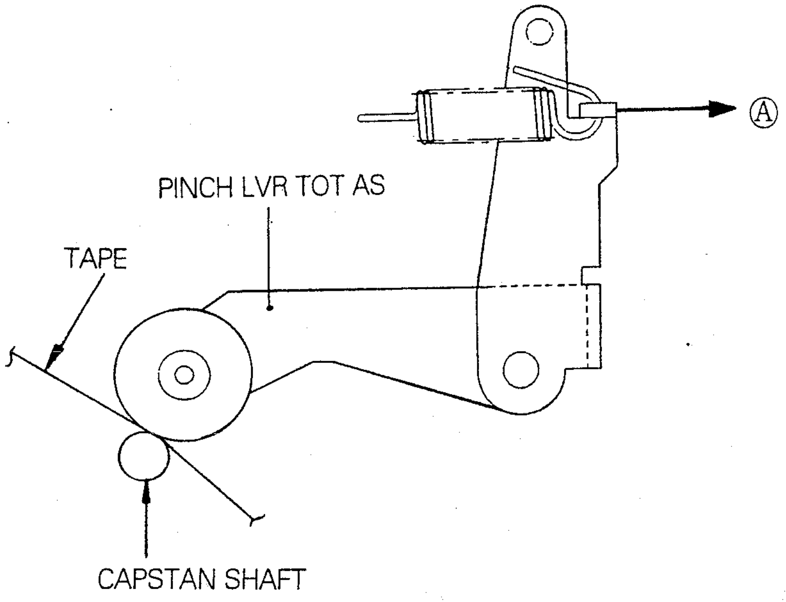


Fig. 4-5 MEASUREMENT OF PRESSING FORCE FOR PINCH ROLLER

4. ADJUSTMENT OF TENTION POLE POSITION

1) Turn on the Power and set to PLAY Mode by turning the WORM WHEEL without cassette.
2) Confirm with your eyes whether the datum hole of TENSION LEVEL meets that of the MAIN BASE.
3) If they do not meet, turn the BAND BRAKE CAP to the CW or the CCW direction until holes meet each other (See Fig. 4-6).

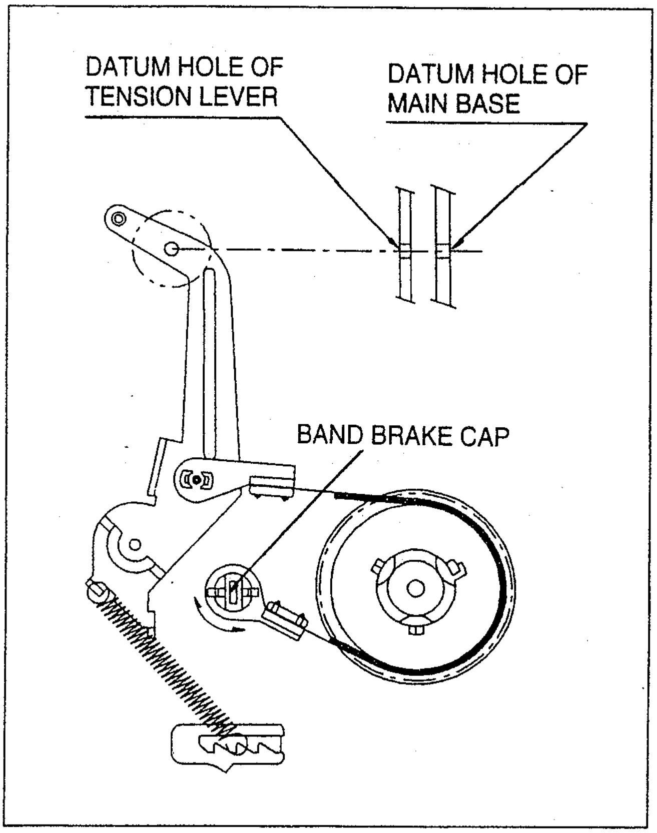


Fig. 4-6 ADJUSTMENT OF THE TENTION POLE POSITION

5. MEASUREMENT OF THE BACK TENTION

1) Before mesuring the BACK TENTION, make sure that the position of TENSION POLE is adjusted correctly.
2) Play back T-120 tape at its center position without F/L ASS'Y, wait until the tape running is stabilized (about 10-20 seconds).
3) Set the Tentelometer as shown in Fig. 4-7 and confirm the scale (SPEC: 20-27 gr/cm).
4) If the scale indicates more than 27 gr/cm, move the TENSION SPRING to "A" direction and less than 20 gr/cm, move to "B" direction. (See Fig. 4-7)

NOTES:

- Make sure that the three probes of the TENTELOMETER as all in good contact with tape.
- It is recomended to be measured three times as TENTELOMETER is very sensitive.

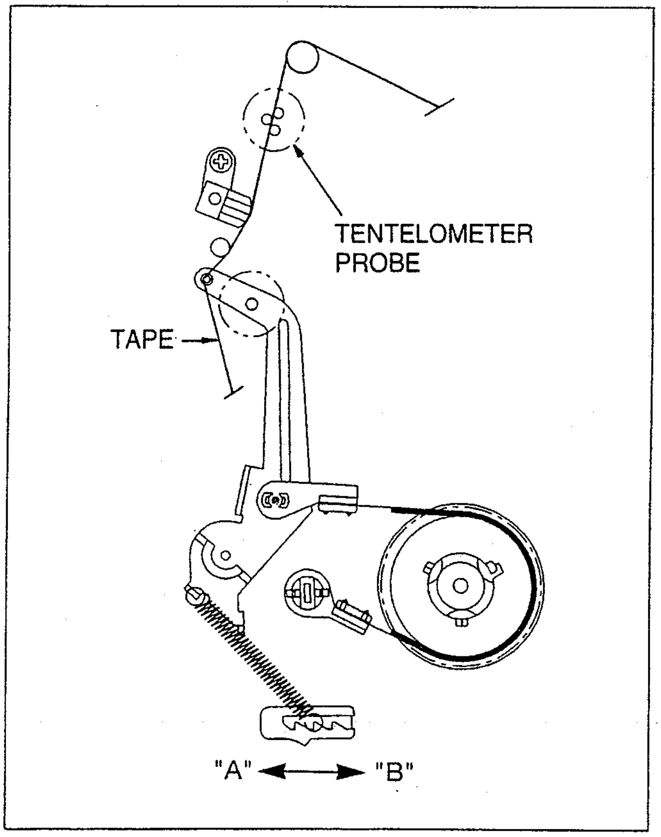
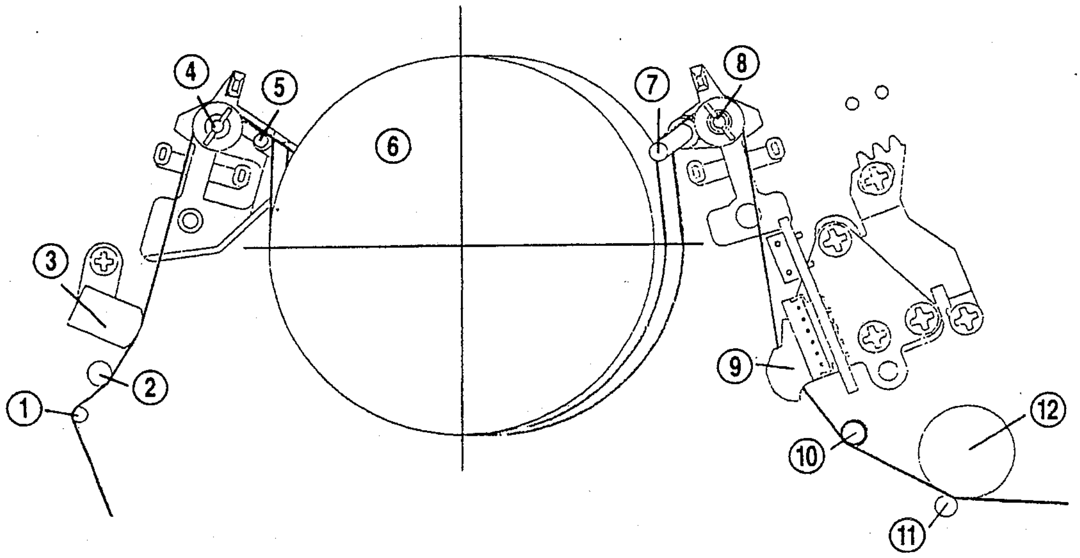


Fig. 4-7 MEASUREMENT OF THE BACK TENTION

5. THE ADJUSTMENT OF THE TAPE TRANSPORTING SYSTEM

The tape transporting system has been precisely adjusted at the factory and does not ordinary require readjustment. But when the noise and tape damage takes place and parts that compose the tape transporting system are replaced due to troubles by long usage or unexpected accidents, check and readjust the tape transporting system.

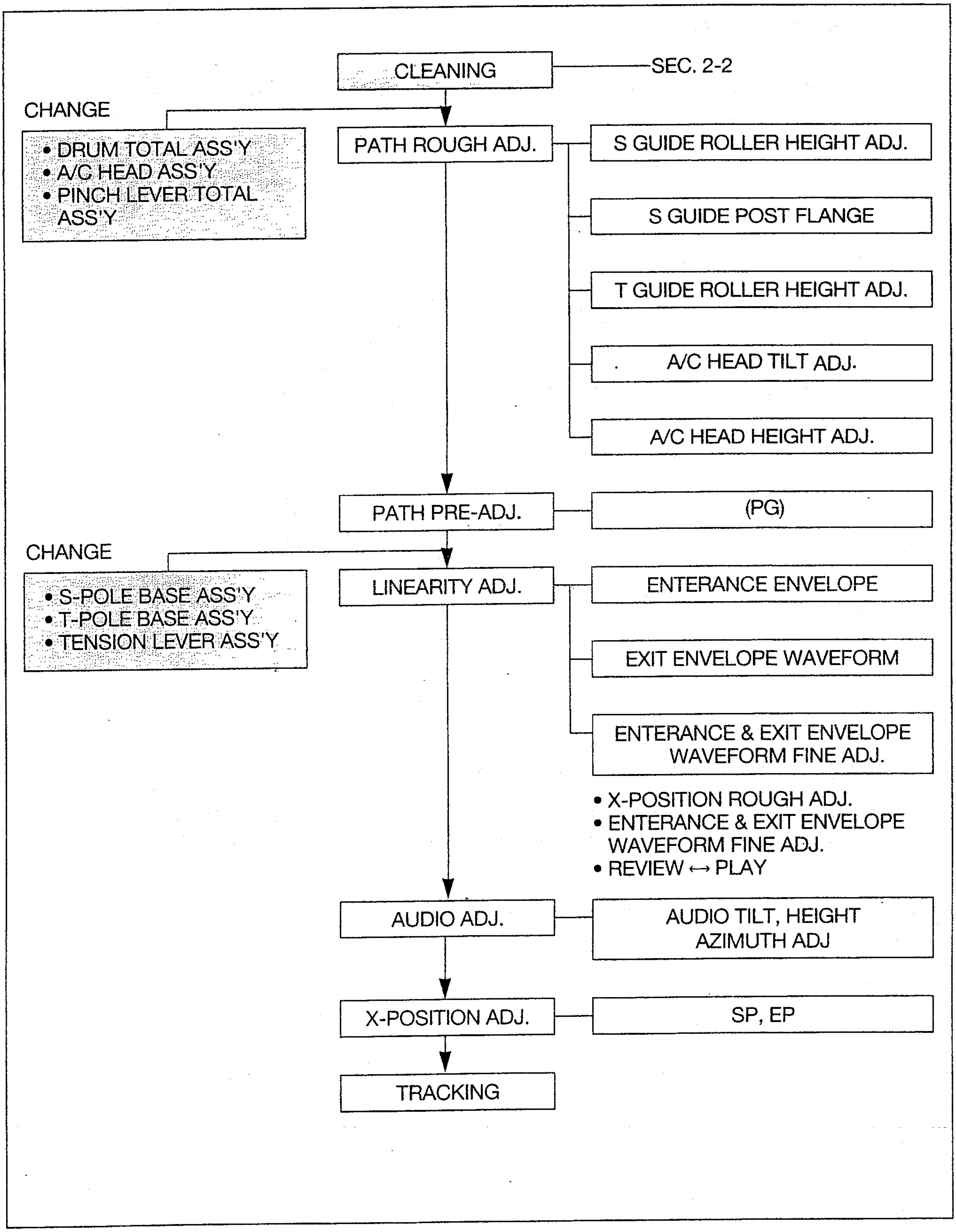
5-1. THE SCHEMATIC DIAGRAM OF TAPE TRANSPORTING SYSTEM



① TENSION POLE
② S GUIDE POST
③ FE HEAD
④ S GUIDE ROLLER
⑤ S SLANT POLE
⑥ DRUM
⑦ T SLANT POLE
⑧ T GUIDE ROLLER
⑨ A/C HEAD
⑩ T GUIDE POST
⑪ CAPSTAN SHAFT
⑫ PINCH ROLLER

Fig. 5-1

2. ADJUSTMENT FLOW


CLEANING
SEC. 2-2
CHANGE
• DRUM TOTAL ASS'Y
• A/C HEAD ASS'Y
• PINCH LEVER TOTAL ASS'Y
PATH ROUGH ADJ.
S GUIDE ROLLER HEIGHT ADJ.
S GUIDE POST FLANGE
T GUIDE ROLLER HEIGHT ADJ.
A/C HEAD TILT ADJ.
A/C HEAD HEIGHT ADJ.
PATH PRE-ADJ.
(PG)
CHANGE
• S-POLE BASE ASS'Y
• T-POLE BASE ASS'Y
• TENSION LEVER ASS'Y
LINEARITY ADJ.
ENTERANCE ENVELOPE
EXIT ENVELOPE WAVEFORM
ENTERANCE & EXIT ENVELOPE WAVEFORM FINE ADJ.
• X-POSITION ROUGH ADJ.
• ENTERANCE & EXIT ENVELOPE WAVEFORM FINE ADJ.
• REVIEW ↔ PLAY
AUDIO ADJ.
AUDIO TILT, HEIGHT AZIMUTH ADJ
X-POSITION ADJ.
SP, EP
TRACKING

3. ADJUSTMENT PROCEDURES

1) ROUGH ADJUSTMENT OF THE TAPE PATH

After loding T-160 Tape, play it.

1-1) THE HEIGHT ADJUSTMENT OF S & T GUIDE ROLLER

A. Make sure that the tape is creased or gapped at the UPPER FLANGE of S & T GUIDE ROLLER (refer to Fig. 5-1 ④, ⑧) and entrance and exit side of the LEAD LINE which was formed in the LOWER DRUM.

B. If the tape is creased or gapped, turn S, T GUIDE ROLLER and adjust the tape running to go smoothly.

1-2) TILT ADJUSTMENT OF A/C HEAD

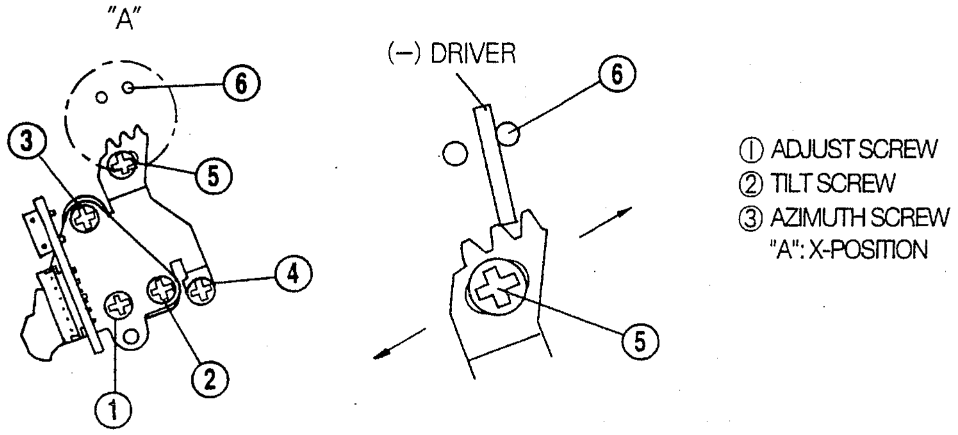
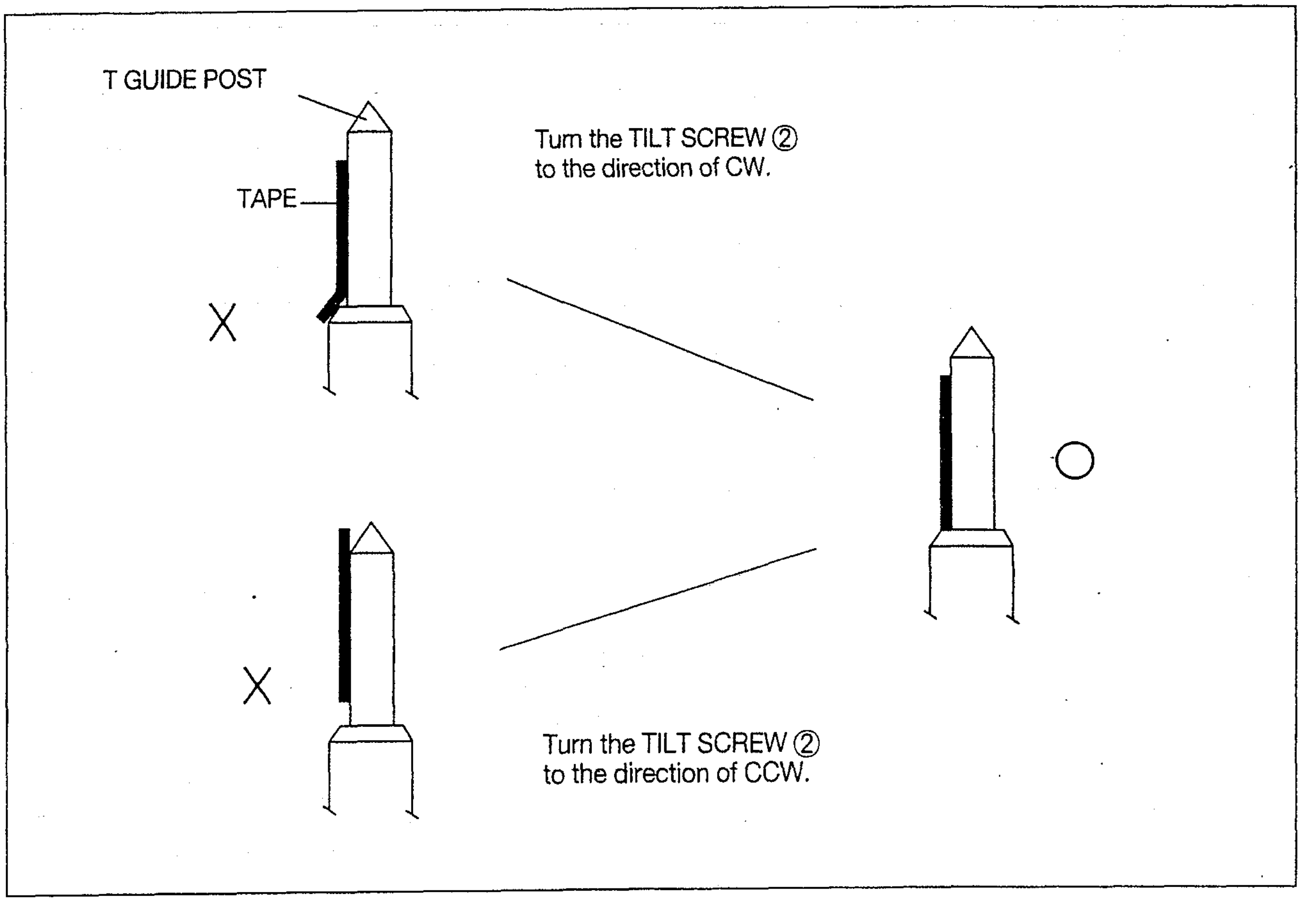

"A"
⑥
③
⑤
④
②
①
(−) DRIVER
⑥
⑤
① ADJUST SCREW
② TILT SCREW
③ AZIMUTH SCREW
"A": X-POSITION

Fig. 5-2

A. Check the running state of the tape at the lower end of T GUIDE POST.

B. If the running state is extraordinary, adjust the TILT SCREW (refer to Fig. 5-2 ②) to obtain the running of tape normal as shown in Fig. 5-3.



Turn the TILT SCREW ② to the direction of CW.

Turn the TILT SCREW ② to the direction of CCW.

Fig. 5-3

1-3) THE HEIGHT ADJUSTMENT OF A/C HEAD

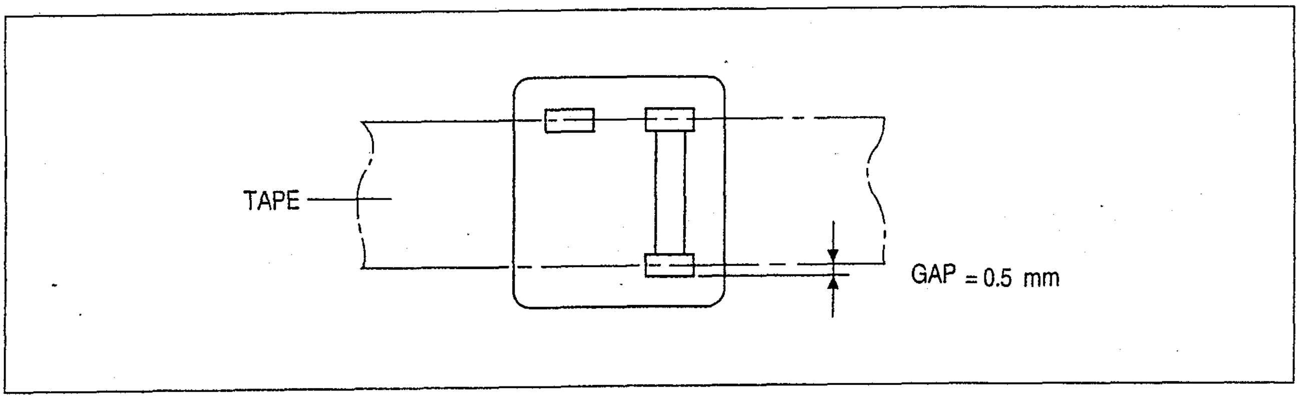


Fig. 5-4

A. Make sure that the gap is 0.5mm between the lower end of tape and that of CTL HEAD.
B. Turn and adjust the screw to CCW in order ① → ② → ③ when the gap is longer than 0.5mm.
C. Turn and adjust the screw to CW in order ① → ② → ③ when the gap is shorter than 0.5mm.

2) PLAYBACK PHASE ADJUSTMENT (PG ADJUSTMENT)

A. Connect the CH 1 of OSCILLOSCOPE to the TP 01-3 (HEAD SWITCHING PULSE) and connect the CH 2 to the VIDEO OUT and adjust the TRACKING VR to the center.
B. Play back the STAIR STEP SIGNAL TAPE (DN-2).
C. Adjust the PG VOLUME for time interval of 6.5H ± 0.5H between switching pulse and V-sync signal.

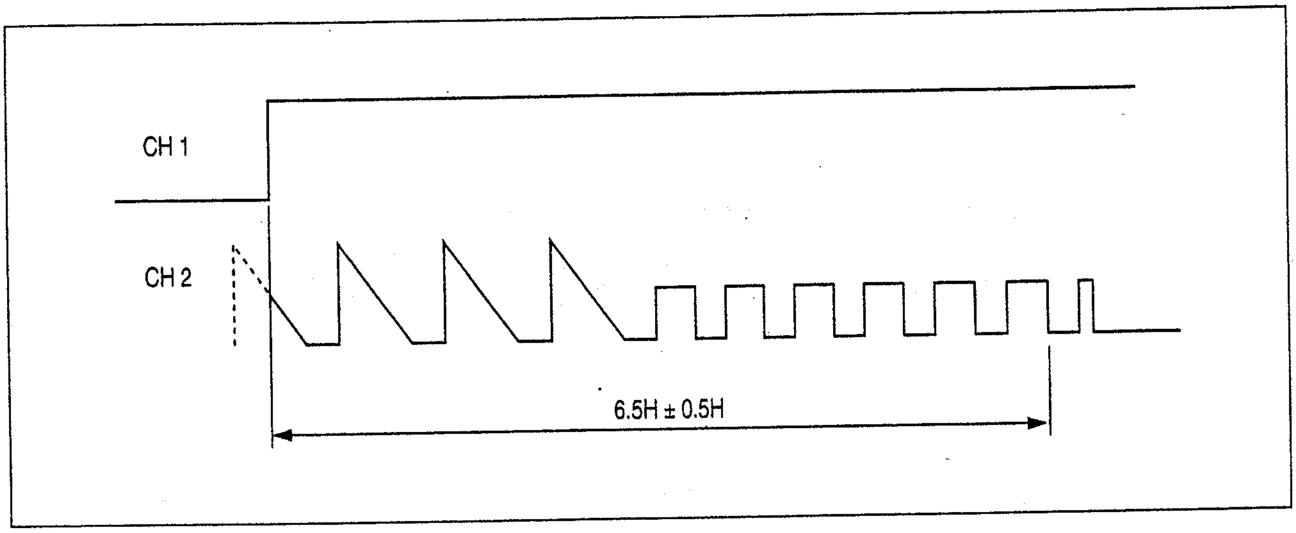


Fig. 5-5

3) LINEARITY ADJUSTMENT

Connect the CH1 of the OSCILLOSCOPE to the TP01-2 (CTL PULSE).
CH2 to the TP01-4 (ENVELOPE WAVEFORM) and EXT. TRIGGER to the TP01-3 (SWITCHING PULSE) and play back the TEST TAPE in SP mode.

3-1) AJUSTMENT OF THE S, T GUIDE ROLLER
A. Adjust the TRACKING VR to obtain maximum FM SIGNAL of the TEST TAPE.
B. Adjust the S, T GUIDE ROLLER (refer to Fig. 5-1 ④, ⑧) until the ENVELOPE waveform at the entrance and the exit sides is as shown in Fig. 5-6.

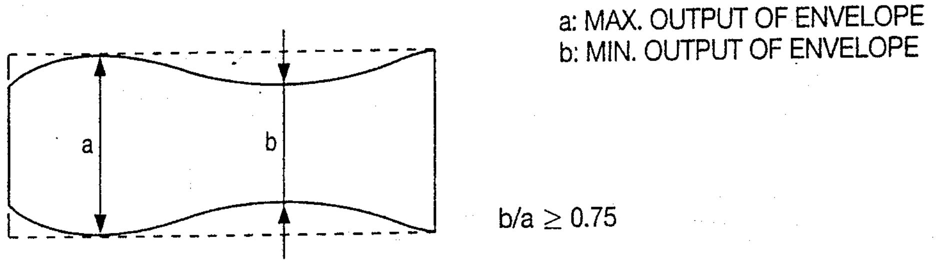


Fig. 5-6

3-2) ROUGH ADJUSTMENT OF THE X-POSITION

A. Turn the TRACKING VR to center.

B. Release the ④, ⑤ screw of the AC HEAD in Fig.5-2 about 90-120 degrees.

C. Turn the AC HEAD TOT AS to obtain maximum ENVELOPE waveform by using the (–) driver as shown in Fig. 5-2.

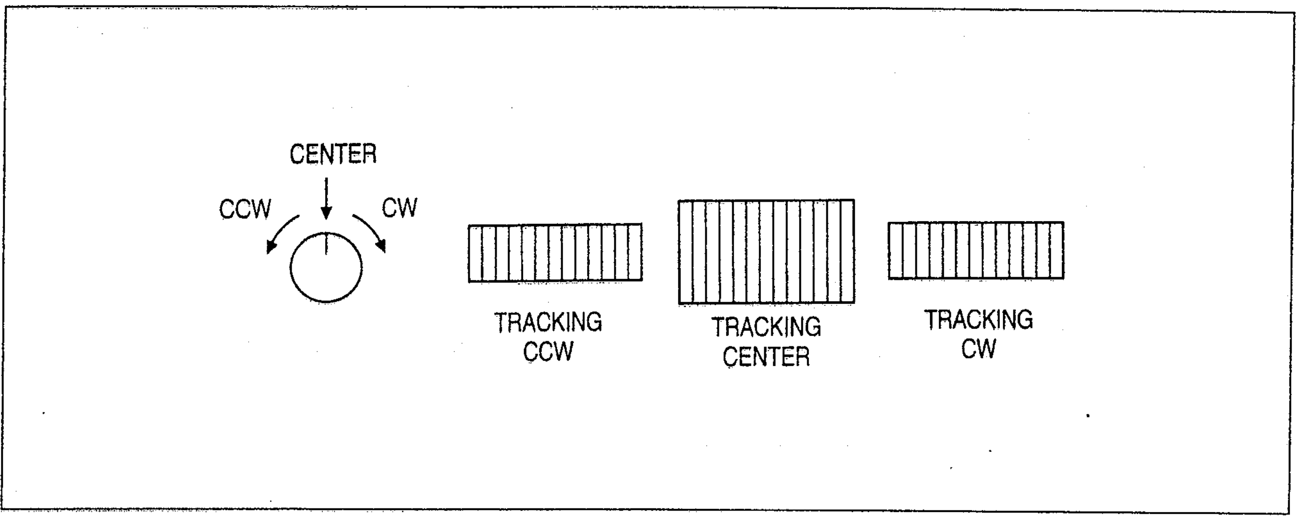

CENTER
CCW
CW
TRACKING CCW
TRACKING CENTER
TRACKING CW

Fig. 5-7

3-3) THE FINE ADJUSTMENT OF THE ENTRANCE AND THE EXIT SIDES OF ENVELOPE WAVEFORM

A. Turn the TRACKING VR to CW or CCW and check the ENVELOPE waveform is changed uniformly.

B. If the ENVELOPE waveform as shown in Fig.5-8, 9, 10 is not uniformed, adjust the S, T GUIDE ROLLER repeatedly at the point of nonflat.

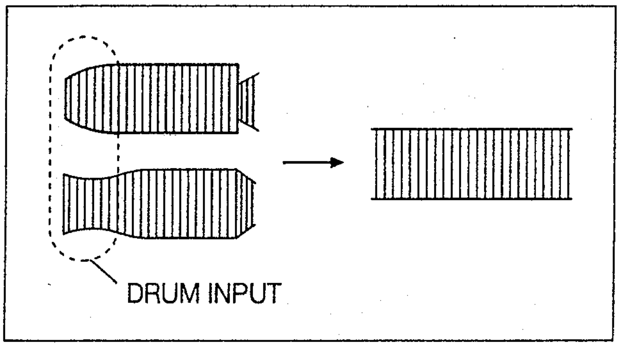


Fig. 5-8

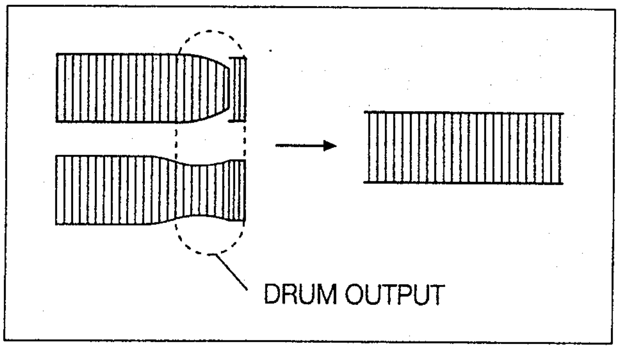

DRUM OUTPUT

Fig. 5-9

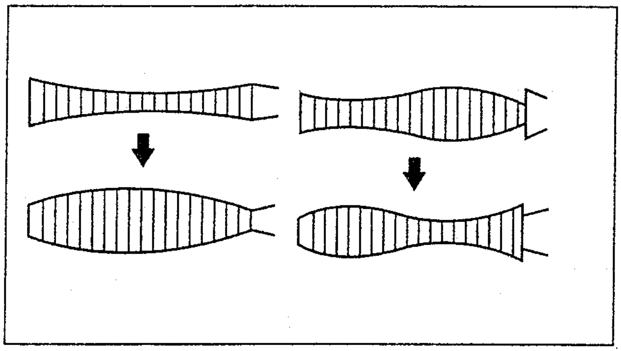


Fig. 5-10

3-4) CHECK FOR TRANSITIONAL OPERATION FROM REVIEW WAVEFORM TO PLAY WAVEFORM
A. Play back DN-2 test tape (Recorded Stairstep signal in SP mode).
B. Make sure the ENVELOPE waveform is maximum.
C. Review the tape and push the PLAY BUTTON after 5 seconds at least.
Check whether the ENVELOPE waveform is returned to the normal PLAY waveform or not within 3 seconds and there is any noise at the upper and lower side of monitor.

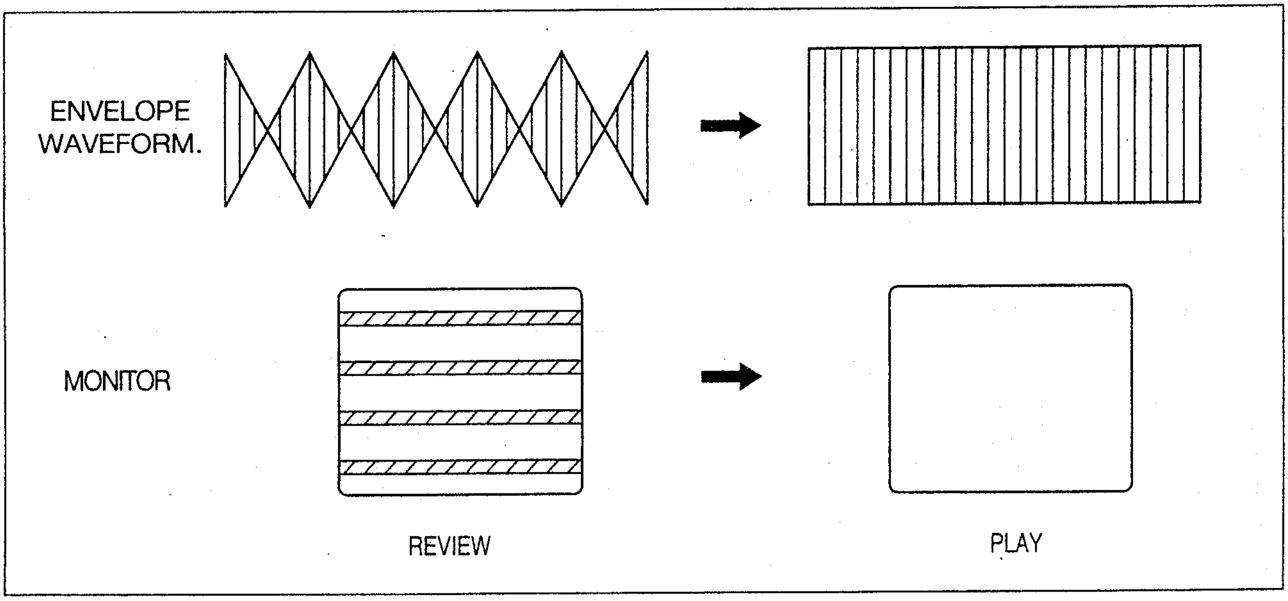


Fig. 5-11

D. In case return of the ENVELOPE waveform at the entrance and the exit sides is slow or the noise is occurred at the upper or lower side of monitor, check the running state of tape at the lower end of T GUIDE POST. If the tape is creased, re-adjust the S, T GUIDE ROLLER.

4) AUDIO ADJUSTMENT

Make sure no tape wrinkle is caused at the lower end of T GUIDE POST during play and if not, perform the audio adjustment.

4-1) ADJUSTMENT OF THE AUDIO TILT AND HEIGHT
A. Connect the AUDIO OUTPUT to the AUDIO LEVEL METER.
B. Play back the DN-1 (COLOR BAR) and check the level of the AUDIO OUTPUT.
SPEC.: MIN. OUTPUT -4.5~-8.5dBm.
C. In case the output of 1KHz is out of the specification, re-adjust the TILT and the HEIGHT of AC HEAD at the same method as 1-2) and 1-3).

4-2) AUDIO AZIMUTH ADJUSTMENT

A. In state of the connecting AUDIO OUTPUT to AUDIO LEVEL METER, play back the DN-2 tape (STAIRSTEP: 7KHz).

B. Adjust the AUDIO output to be maximum by turning of AC HEAD AZIMUTH SCREW (refer to Fig. 5-2 ③).
SPEC.: MIN OUTPUT: -8.5~-12.5DBM
THE DIFFERENCE BETWEEN 1KHz AND 7KHz: +2~-4dBm
THE RANGE OF CHANGE OF AUDIO LEVEL IN 7KHz: less than 1dBm.

C. After adjusting, check whether the tape is shaked or flickered during running in between T GUIDE ROLLER and AC HEAD.
If the problem is occurred, re-adjust the AUDIO.

D. After adjusting, reconfirm the ENVELOPE waveform.
If the problem is occurred, perform the fine adjustment of the entrance and the exit sides of ENVELOPE WAVEFORM at the article 3-3) method.

5) X-POSITION ADJUSTMENT

A. Connect CH 1 of the OSCILLOSCOPE with TP01-2 (CTL PULSE), CH2 with TP01-4 (ENVELOPE) and EXIT. TRIGGER with TP01-3 (SWITCHING PULSE).

B. After tuning the TRACKING VR to center, play back the TEST TAPE (SP MODE).

C. Turn the AC HEAD TOT AS by using (-) driver in the same method as Fig. 5-2 in order that the ENVELOPE waveform is as shown in Fig. 5-12 when the TRACKING VR is turned to CW or CCW.

D. After adjust the X-POSITION, please confirm the PG.

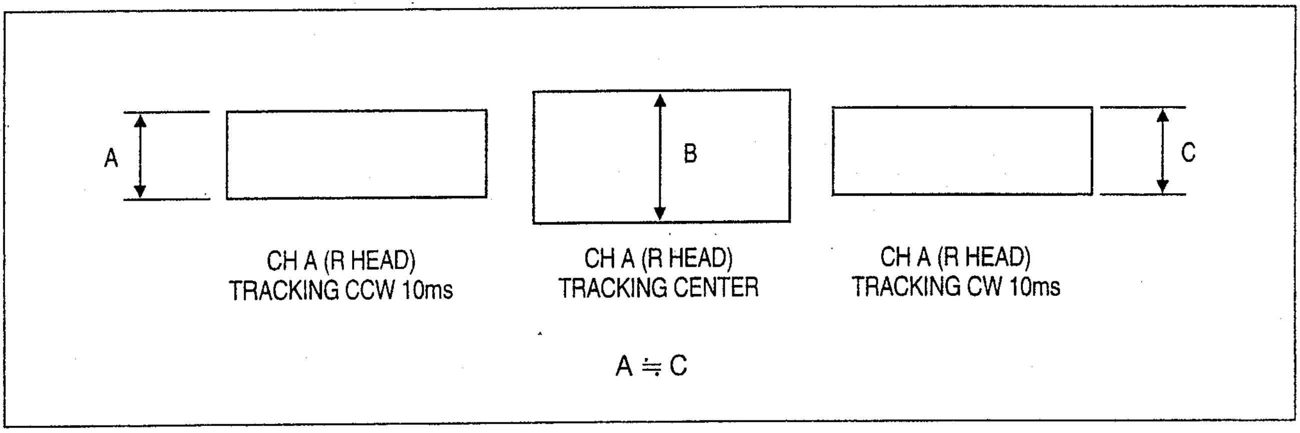


Fig. 5-12

D. Play back the DN-2E TEST TAPE (EP MODE) and check whether there is the nature of direction as shown Fig. 5-13.
(It has not to change of waveform and there is not any noise in the picture from CCW 4ms to CW 6ms of TRACKING VR)

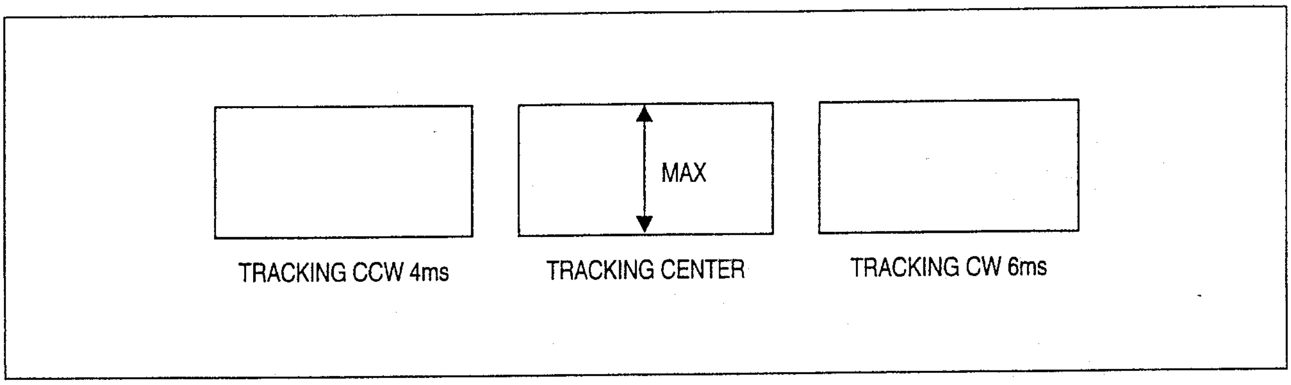
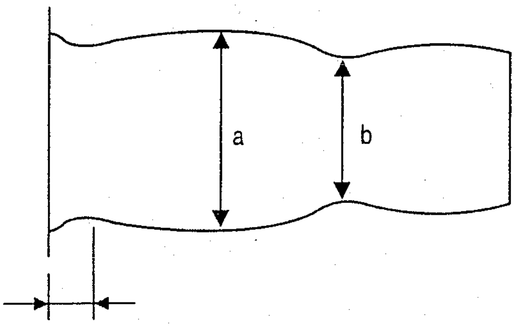


Fig. 5-13

E. If not, re-adjust from the article B.
F. After adjusting X-POSITION, check whether 7KHz output of DN-2 is maximum.
G. When the adjustment is completed, fasten the AC HEAD SCREW ④, ⑤ suitably.

6) CHECK FOR THE LINEARITY OF CO-EXCHANGING TRACKING



a : MAX
b : MIN

Vert = b/a

(FM)

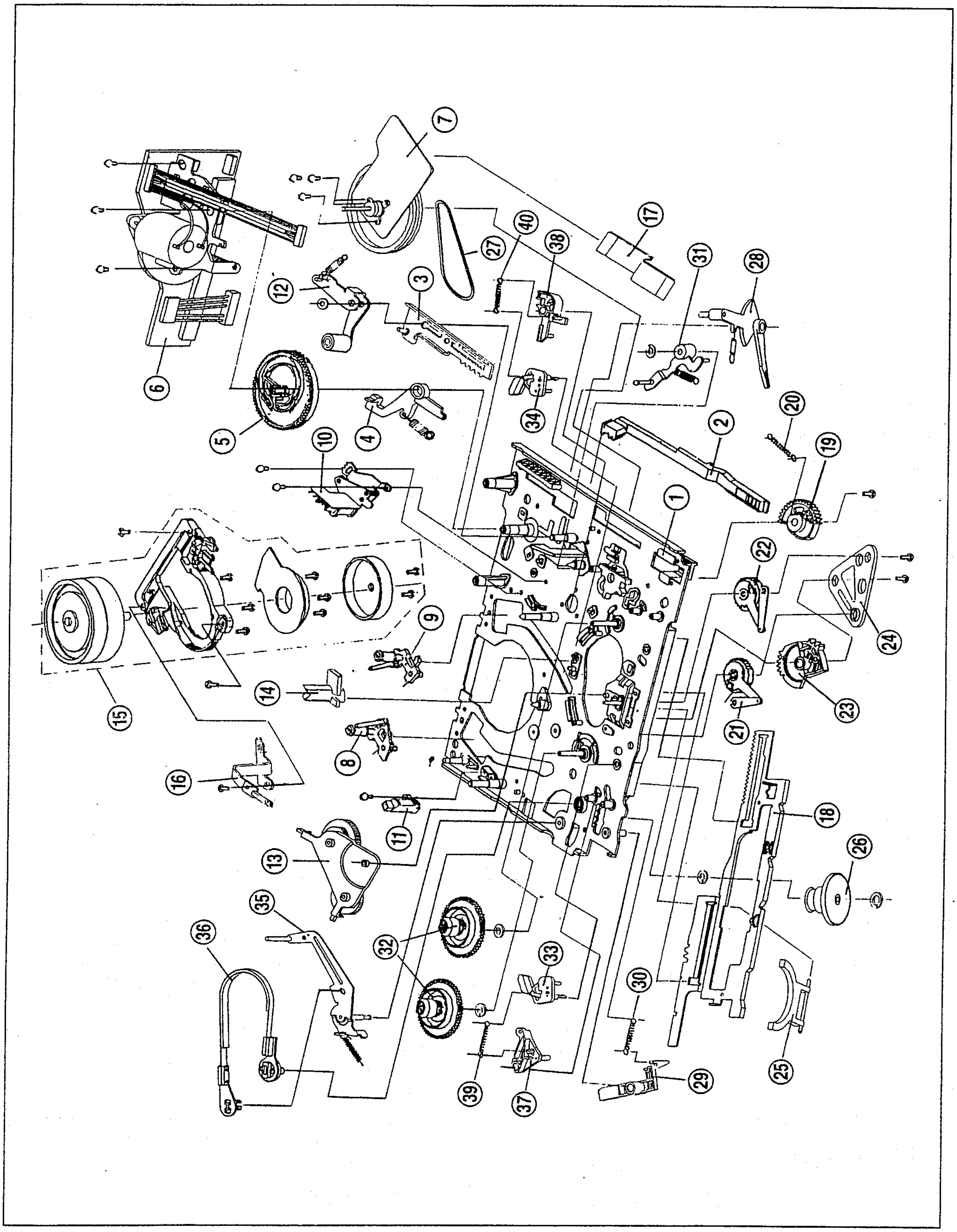
MODE	TAPE	CHECK	TRACKING VR			
			CCW 6ms	CCW 4ms	CENTER	CW 6ms
SP	DN-2	LINEARITY	4 : 3		4 : 3.5	4 : 3
		NOISE	NOTHING		NOTHING	NOTHING
EP	DN-2E	LINEARITY		4 : 3	4 : 3. 5	4 : 3
		NOISE		NOTHING	NOTHING	NOTHING

7) FINAL CHECK

Make sure no tape wrinkle is caused at each GUIDER ROLLER and POST.

6. EXPLODED VIEW AND PARTS LIST

1. EXPLODED VIEW OF DECK ASS'Y



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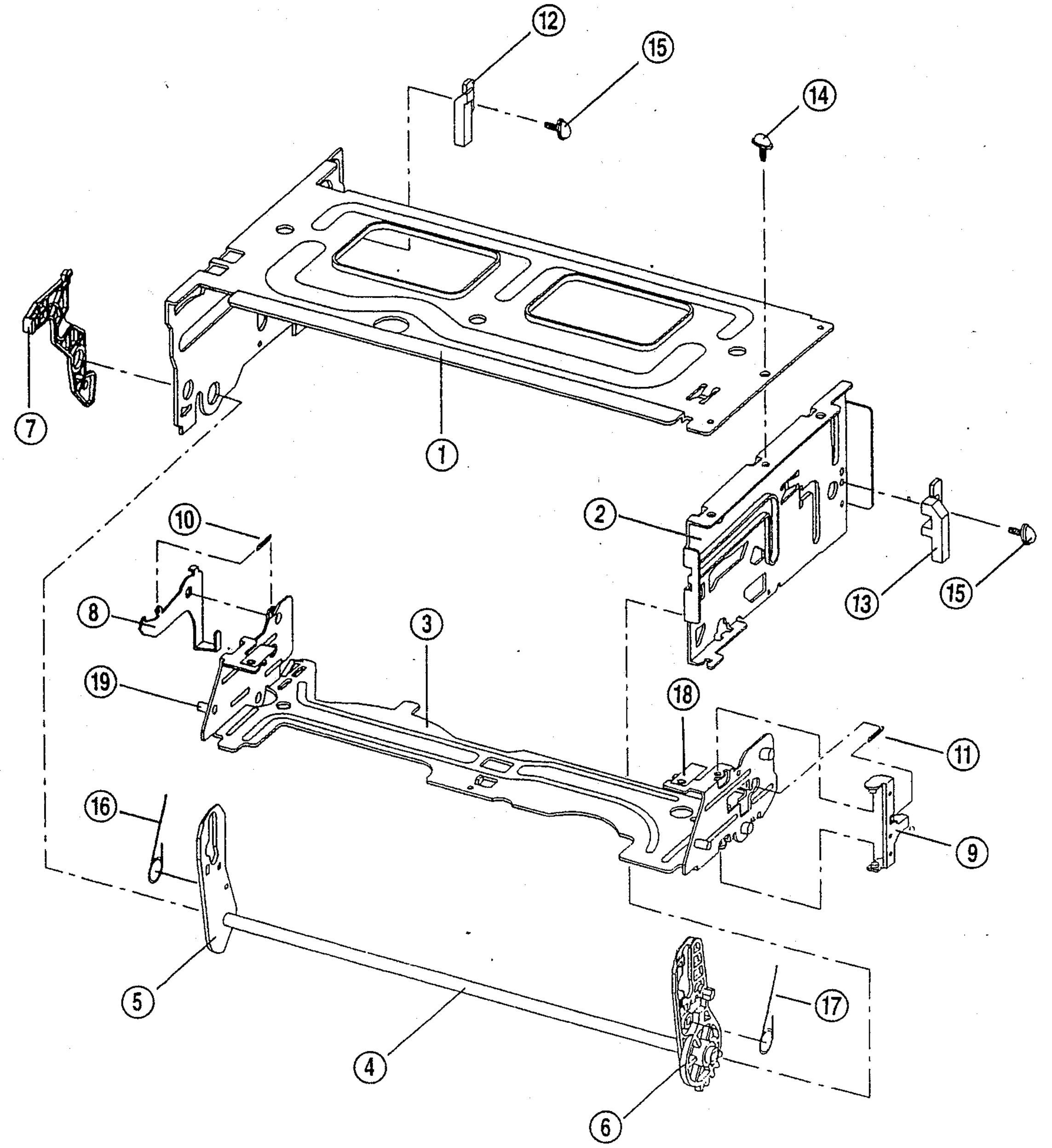
2. PARTS LIST OF DECK ASS'Y

NO	STOCK NO.	PART NAME	Q'TY	REMARKS
1	97SA300400	MAIN BASE AS	1 EA	
2	97S2700100	F/L DRIVE RACK	1 EA	
3	97SA300500	RELAY PLATE AS	1 EA	
4	97SA304700	RETURN LEVER AS	1 EA	
5	97S2700200	CAM GEAR	1 EA	
6	97SA300700	L/C BRKT AS	1 EA	
7	97S8100100	CAPSTAN MOTOR	1 EA	
8	97SA300800	S SLANT POLE AS	1 EA	
9	97SA300900	T SLANT POLE AS	1 EA	
10	97SA302000	A/C HEAD TOT AS	1 EA	
11	97S8000600	FE HEAD	1 EA	
12	97SA300600	PINCH LEVER TOT AS	1 EA	
13	97SA301400	IDLER PLATE AS	1 EA	
14	97S2601300	LED PRISM LINK	1 EA	
15	97SA245800 97SA247000 97SA246000 97SA246200 97SA247200 97SA246200 97SA249600	DRUM TOTAL AS DRUM TOTAL AS DRUM TOTAL AS DRUM TOTAL AS DRUM TOTAL AS DRUM TOTAL AS DRUM TOTAL AS	1 EA 1 EA 1 EA 1 EA 1 EA 1 EA 1 EA	NTSC 2H'D NTSC 4H'D PAL 2H'D SP PAL 2H'D LP PAL 4H'D SECAM 2H'D SECAM 4H'D
16	97SA302100	EARTH BRKT AS	1 EA	
17	97P88F0908	CABLE FFC AS	1 EA	
18	97S0900200	MAIN PLATE	1 EA	
19	97S2700600	RELAY GEAR	1 EA	
20	97S3002400	RELAY SPRING	1 EA	
21	97SA301000	L LOADING GEAR AS	1 EA	
22	97SA301100	R LOADING GEAR AS	1 EA	
23	97S2700700	LOAD RELAY GEAR	1 EA	
24	97S0900300	LOADING GUIDE PLATE	1 EA	
25	97S2600700	CLUTCH LEVER	1 EA	
26	97SA301200	REEL DRIVE TOTAL AS	1 EA	
27	97S5500200	REEL BELT	1 EA	
28	97SA301300	CAPSTAN BRAKE AS	1 EA	4H'D ONLY

NO	STOCK NO.	PART NAME	Q'TY	REMARKS
29	97S2600800	REC SAFETY LEVER	1 EA	
30	97S3000900	REC SAFETY SPRING	1 EA	
31	97SA301900	REVIEW ARM AS	1 EA	
32	97S2900200	REEL TABLE	2 EA	
33	97SA301500	S MAIN BRAKE AS	1 EA	
34	97SA301700	T MAIN BRAKE AS	1 EA	
35	97SA301800	TENSION LEVER AS	1 EA	
36	97SA302400	BAND BRAKE TOTAL AS	1 EA	
37	97S5700100	S SUB BRAKE	1 EA	
38	97SA301600	T SUB BRAKE AS	1 EA	
39	97S3002200	S BRAKE SPRING	1 EA	
40	97S3002300	T BRAKE SPRING	1 EA	

3. EXPLODED VIEW OF F/L ASS'Y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4. PARTS LIST OF F/L ASS'Y

NO	STOCK NO.	PART NAME	Q'TY	REMARKS
1	97S2400500	TOP PLATE	1 EA	
2	97S2400400	F/L BRKT R.	1 EA	
3	97S0900700	CST HOLDER PLATE	1 EA	
4	97S3600200	LOADING SHAFT	1 EA	
5	97S2601800	LOADING LEVER L	1 EA	
6	97S2601600	LOADING LEVER R	1 EA	
7	97S1800400	DOOR OPENER	1 EA	
8	97S2601500	SAFETY LEVER	1 EA	
9	97S2602400	RELEASE LEVER	1 EA	
10	97S3001800	SAFETY SPRING	1 EA	
11	97S3001700	RELEASE SPRING	1 EA	
12	97S2602200	PRISM LINK L	1 EA	
13	97S2602100	PRISM LIMK R	1 EA	
14	7274260611	TAPTITE SCREW (TT3 WAS 3x6 MFZN)	1 EA	
15	7278300611	TAPTITE SCREW (TT3 WAS 3x6 MFZN)	2 EA	
16	97S3002100	LEVER L SPRING	1 EA	
17	97S3002000	LEVER R SPRING	1 EA	
18	97S3001500	UPPER SPRING	2 EA	
19	97S3502200	HOLDER POST	1 EA	

5. MAIN SPARE PARTS LIST OF DECK ASS'Y

NO.	PART NANE	STOSK NO.	DESCRIPTION	Q'TY	REMARKS
1	F/L DRIVE RACK	97S2700100	PBT (DY44100 GF)	3 EA	
2	RELAY PLATE AS	97SA300500	FM-DECK	3 EA	
3	RETURN LEVER AS	97SA304700	FM-DECK	3 EA	
4	CAM GEAR	97S2700200	POM (DELRIN 500)	3 EA	
5	L/C BRKT AS	97SA300700	FM-DECK	3 EA	
6	CAPSTAN MOTOR	97S8100100	F2QTB00	3 EA	
7	S SLANT POLE AS	97SA300800	FM-DECK	1 EA	
8	T SLANT POLE AS	97SA300800	FM-DECK	1 EA	
9	A/C HEAD TOT AS	97SA302000	FM-DECK	3 EA	
10	FE HEAD	97S8000600	MH-131D	3 EA	RECORD
11	PINCH LEVER TOT AS	97SA300600	FM-DECK	3 EA	
12	IDLER PLATE AS	97AS301400	FM-DECK	3 EA	
13	LED PRISM LINK	97S2601300	PMMA	1 EA	
14	DRUM TOTAL AS	97SA245800 97SA247000 97SA246000 97SA246200 97SA247200 97SA246200 97SA249600	FM-DECK FM-DECK FM-DECK FM-DECK FM-DECK FM-DECK FM-DECK	3 EA 3 EA 3 EA 3 EA 3 EA 3 EA 3 EA	NTSC 2H'D NTSC 4H'D PAL 2H'D SP PAL 2H'D LP PAL 4H'D SECAM 2H'D SECAN 4H'D
15	EARTH BRKT AS	97SA302100	FM-DECK	1 EA	
16	CABLE FFC AS	97P88F0908	FM-DECK	1 EA	
17	MAIN PLATE	97S0900200	EGSAFC 40R	3 EA	
18	RELAY GEAR	97S2700600	POM (DL8502)	1 EA	
19	RELAY SPRING	97S3002400	SWPB	1 EA	
20	L LOADING GEAR AS	97SA301000	FM-DECK	1 EA	
21	R LOADING GEAR AS	97SA301100	FM-DECK	1 EA	
22	LOAD RELAY GEAR	97S2700700	POM (DL8502)	1 EA	
23	LOADING GUIDE PLATE	97S0900300	SECC T1.0	1 EA	
24	CLUTCH LEVER	97S2600700	POM	1 EA	
25	REEL DRIVE TOTAL AS	97SA301200	FM-DECK	3 EA	
26	REEL BELT	97S5500200	CR	3 EA	
27	CAPSTAN BRAKE AS	97SA301300	FM-DECK	1 EA	4H'D ONLY
28	REC SAFETY LEVER	97S2600800	POM	3 EA	

NO.	PART NANE	STOSK NO.	DESCRIPTION	Q'TY	REMARKS
29	REC SAFETY SPRING	97S3000900	SUS304 WPB	1 EA	
30	REVIEW ARM AS	97SA301900	FM-DECK	1 EA	
31	REEL TABLE	97S2900200	POM	1 EA	
32	S MAIN BRAKE AS	97SA301500	FM-DECK	3 EA	
33	T MAIN BRAKE AS	97SA301700	FM-DECK	3 EA	
34	TENSION LEVER AS	97SA301800	FM-DECK	1 EA	
35	BAND BRAKE TOTAL AS	97SA302400	FM-DECK	1 EA	
36	S SUB BRAKE	97S 5700100	POM	3 EA	
37	T SUB BRAKE AS	97SA301600	FM-DECK	3 EA	
38	S BRAKE SPRING	97S3002200	SWPB	1 EA	
39	T BRAKE SPRING	97S3002300	SUS304 WPB	1 EA	
40	F/L AS	97SA245000	FM-DECK	3 EA	
41	POLY WASHER	97S3108200	d2.6xD6xT0.5	5 EA	
42	POLY WASHER	97S3106300	d3.6xD6xT0.5	5 EA	
43	POLY WASHER	97S3904000	d3.1xD6xT0.25	5 EA	
44	POLY WASHER	97S3903600	d3.1xD6xT0.5	5 EA	
45	TAPTITE SCREW	7044301011	TT3 RND 3x10 MFZN	5 EA	
46	TAPTITE SCREW	7274301211	TT3 RND 3x12 MFZN	5 EA	
47	TAPTITE SCREW	7278260611	TT3 RND 2.6x6 MFZN	5 EA	
48	TAPTITE SCREW	7171261011	TT2 RND 2.6x10 MFZN	5 EA	
49	TAPTITE SCREW	7178300811	TT2 RND 3x8 MFZN	10 EA	
50	MACHINE SCREW	7001301011	PAN 3x10 MFZN	5 EA	